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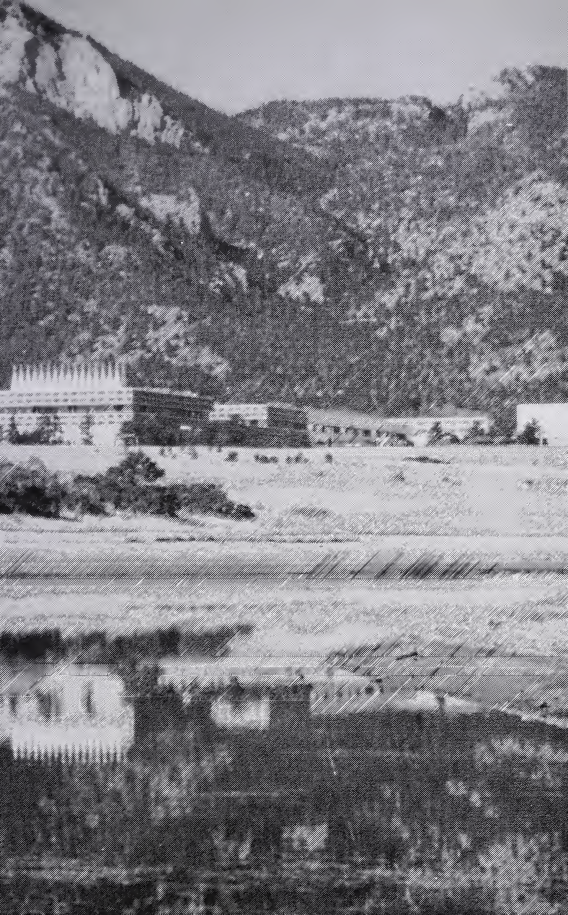


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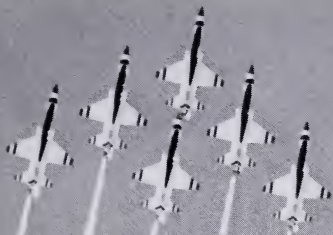






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**AIR FORCE ACADEMY
CADET HANDBOOK**



CONTRAILS

**Volume 29
1983 - 1984**

**UNITED STATES
AIR FORCE ACADEMY
COLORADO**

CONTRAILS STAFF

OFFICER-IN-CHARGE

Major Charles A. Wood

CADET-IN-CHARGE

Gregory A. Quandt, '84

STAFF

Andrew M. Mueller, '85

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DEDICATION



“Sacrifices must be made . . .” (Otto Lilienthal.)

Dedicated to the 1981-1982
United States Air Force
Thunderbirds

Lieutenant Colonel D.L. Smith
Major Norman L. Lowry
Captain David L. “Nick” Hauck, '71
Captain Willie Mays
Captain Mark E. Melancon
Captain Joseph “Pete” Peterson



General Dynamics F-16 Fighting Falcon

PREFACE

Air power has progressed at a phenomenal rate since 1903, and with it the Air Force. You are beginning training which will enable you to be an integral part of the nation's first line of defense, but you must take only one step at a time as did the Air Force. Basic Cadet Summer is your first step toward becoming a professional cadet, just as being a professional cadet is the first step toward becoming a professional officer.

This handbook introduces you to basic military concepts, the Air Force and its heritage, the Academy, the cadet program, as well as the other military services. You, as cadets, are but a small part of the whole, but each, nonetheless, is important. You must strive to do your absolute best in *every* undertaking. You owe it to yourselves to understand what is being taught. Understanding, plus maximum effort, will make you a better cadet and, more importantly, a better officer.

While every effort was taken to insure that CONTRAILS is as up-to-date and reliable as possible, the nature of the rapidly changing Air Force may make some of the information in this book out of date even as it is published. Current information may be obtained from your Professional Military Studies Instructor, your Air Officer Commanding, your Squadron Training Officer, or your cadet chain of command.



Captain Eddie Rickenbacker; America's "Ace of Aces"

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SUPERINTENDENT'S WELCOME MESSAGE TO THE CLASS OF 1987

Welcome to the United States Air Force Academy and to the ranks of those who devote themselves to their country and to the military profession. The staff, faculty and Cadet Wing join me in congratulating you on your appointment to the class of 1987.

The Academy is not only an academic institution but one which produces the finest leaders possible. This can be done only with highly select individuals who have uncommon potential. You have shown this potential for leadership and for the intellectual, physical and moral development necessary to become Air Force officers. Your years at the Academy are designed to develop that potential.

Time and again you will face challenges which you think are insurmountable. Meet these challenges with the same motivation that has overcome obstacles in the past. Never lose sight of the goal that brought you here, and never accept failure. Use your experiences as a springboard to set higher goals and give every test, every challenge, your whole effort. Internalize this attitude, and you will find that your capabilities far exceed what you thought they were.

You are beginning the finest experience of your life. By taking advantage of all the opportunities available to develop your skills, you will be ready to take your place with those who have gone on before, to be a member of the finest Air Force in the world.

I am looking forward to watching your class grow and mature. Keep a good spirit, hold your goals high and let nothing deter you from making '87 the best class ever.

THE MILITARY PROFESSION



THE UNIFORM OF MY COUNTRY

by Captain Karen Dorman Kimmel

Over two hundred years ago the first thread of the uniform I wear was woven. While great men dreamed of a country of free people, the army and navy that would win her liberty had already begun to organize. As the fledgling country grew stronger, so did its uniform develop. Each button and ribbon that has been added through the years boasts of victory at sea, conquests on land and some of military aviation's greatest successes. The added medals and insignia laud moments of heroism known to us all. I wear the uniform of my country because, as America is a blend of races and cultures, my uniform is a woven, visual history of her people's courage, determination and unique love of freedom.

Without a word this uniform also whispers of freezing troops, injured bodies, and Americans left forever in foreign fields. It documents every serviceman's courage, who by accepting this uniform, promises the one gift he truly has to give: his life. I wear my uniform for the heritage of sacrifice it represents and more.

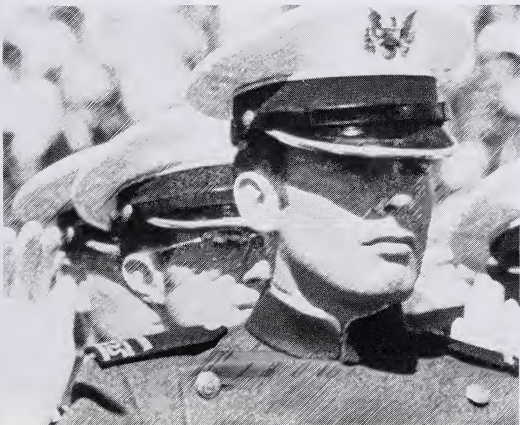
No factor in America's growth has been greater than the men and women who have worn her uniform to help keep her strong. In war and in peace, they have circled the earth and journeyed to the moon, always carrying America's ideals with them. Their service to her has been a legend of honor.

I wear my uniform with pride for it represents the greatest nation of free people in the world. America serves as an example for those who strive to be free. They recognize this uniform as standing for millions of Americans who respect their world neighbors and wish to live in peace with them. My uniform is an extension of my people and my nation.

Most importantly, I wear the uniform of my country because others do not. America's freedom is a right given by God, but defended by man. It is our overwhelming responsibility to preserve our heritage of freedom for all Americans and I accept that challenge willingly.

I wear the uniform of my country because of its history, its heritage of honor, its service to America, its representation of my people and because of my desire to live in a free land. Hopefully, I wear this uniform in peace. But America's enemies must know that I will also stand fearlessly in war as those before me have stood.

I pray only that I do not stand alone.





AS PROUD AS THEY COME

by Gregory A. Quandt

(Class of 1984)

They fly with the colors of Old Glory; their red, white, and blue mounts dance on silvered wings; they bring a "lump in the throat feeling" to all who watch below. They fly change-over rolls and bomb-bursts like nobody's business and seemingly flaunt the limits of flight at a mere 100 feet on the deck. Their faces are healthy and handsome, all-American, with a look that says, "we can get over any mountain." They are the blue-sky guys, daring but indestructible, with an attitude that they are a million miles from the end of their flights. These are the Thunderbirds, men and machines locked in perfect harmony of flight, leaving their contrails forever in the sky.

The United States Air Force Thunderbirds were activated in May 1953 under the Tactical Air Command to "promote better understanding and appreciation of air power and to assist with the effective advancement of national objectives." The team started at Luke AFB, Arizona in Republic F-84G Thunderjets, and later, in 1956, moved to Nellis AFB, Nevada and the North American F-100C Super Sabre. After a brief period in the Republic F-105B Thunderchief in 1964, the team returned to the F-100D, and then eventually transitioned to the McDonnell Douglas F-4E Phantom II. In 1974 the Thunderbirds chose the Northrop T-38 Talon as their new demonstration aircraft, proving both more economical as well as more maneuverable than the F-4E. The team continued to fly the T-38 until the tragic January 1982 crash at Indian Springs Auxilliary Field,

Nevada which killed four Thunderbird pilots. These pages stand as a solemn tribute to these four men and to all Thunderbirds who have given their lives promoting peace and good will.

On 1 June 1982, the USAF Academy dedicated the Thunderbird Airmanship Overlook "to serve as a constant reminder to the young men and women of the Air Force Academy Cadet Wing of the pride, professionalism, discipline, dedication, and teamwork that a career in the world's finest air force demands!" It is this attitude, this air of enthusiasm and excellence, that sets a Thunderbird apart from his contemporaries!

Today the Thunderbirds continue to salute the skies, tracing their familiar red, white, and blue patterns across the distant horizon. New men, new machines, new Thunderbirds; all bonded together with the old Thunderbird tradition — PRIDE!

A fitting ending to this tribute was expressed by Secretary of the Air Force Verne Orr during the Thunderbird Airmanship Overlook dedication. Recalling the events following last year's tragic Thunderbird accident, Secretary Orr related an incident that stands out in his memory, "... When I landed at Eglin AFB, the press met me and the first question I received was, 'Mr. Secretary, will the Thunderbirds continue to fly?' And, the answer to that question was a resounding, 'Yes, they will continue to fly.'"

Secretary Orr summed up the sentiments of the crowd in his closing comment: "Ladies and gentlemen, I hope this country never gets to the point where we are so weak, or so timid, or so conservative that we fail to recognize leadership and thrill to the exploits and daring of those like the Thunderbirds."

REFLECTIONS ON PROFESSIONALISM

by Major General Pete Todd
(Class of 1959)

I salute the men and women of the Class of 1987 and welcome you to the Long Blue Line! As the temporary custodian of the "point position" in that formation, I feel a special warmth and kinship with you, its newest members. You're entering an exciting and challenging new phase of your lives, and doing so at a time when the Air Force is poised for many equally exciting changes—new systems, new applications, new concepts.

However, despite all our soaring technological progress, the Air Force's fundamental mission remains what it has always been: to remain constantly ready to contribute to the defense of our country and our national interests. Stripped to its essentials, I believe that mission also defines what the Air Force Academy is all about—to prepare you to join, contribute to, and eventually lead these efforts.

It is in this context that each of you should recognize that the Air Force is a profession, indeed a "calling," rather than "just another job" or occupation. The hallmark of that profession is Service, with a capital "S." By the same token, the Academy is far more than just a college or a "trade school." In the broadest sense, it's a leadership laboratory designed to educate, broaden, toughen and motivate you for a life of dedicated service to your country.

You've got a lot on your minds right now, but I think it's important for you to grasp this essential nature of the Air Force and the Academy early. Without this perspective, the intellectual, physical,

and emotional challenges you will face as a cadet in the days ahead may seem pointlessly rigorous. More important, the demands you will face later as an officer may overtax your tolerance unless your career goals are framed by the question, “What am I in for?” rather than “What’s in it for me?” What you should be “in” for is service to country, and it’s not too early to begin evaluating the Academy and yourself in that framework.

Each of you was selected on the basis of excellence—qualities of intellect, character, integrity, and leadership which made you stand out from most of your peers. I urge each of you, in your own private way, to make a personal commitment to excellence in every aspect of your lives. Build upon and develop the qualities that won you admission to this select group. Set your personal and professional standards just a little higher than the “system” establishes for you. Whether you leave the Air Force early or decide to devote your life’s energies to its mission, the important thing is to make the professionalism you will learn at the Academy the personal touchstone of your daily living.

I’ve learned lots of lessons in the nearly quarter of a century since I stood where you are, but one of the most elevating of all has been this: give me 10 dedicated professionals with a selfless willingness to service and I can accomplish more than with scores of “job holders.” We’ll never outnumber our adversaries, so we have to outthink and outperform them. We simply have no room for the “summer soldier or the sunshine patriot”—in peace or wartime.

I want to emphasize, though, that the dedication and commitment I’m talking about mustn’t be a blind and unquestioning form of ancestor worship, without a shred of

initiative or imagination. On the contrary, the Air Force depends for its vitality on the innovation and vision of our people. In my book there's no inconsistency between selfless loyalty and a constant search for better ways to perform our mission.

All of these concerns probably seem very remote to you right now; I can remember that my early horizons as a new cadet were often limited to how to get through the next formation alive! But I want to assure you that it won't be long before each of you has to confront many of these professional issues of commitment, challenge, integrity, goals, etc., head on. I hope these random thoughts from somebody who's been through it all will provide a peg on which to hang some of your own thinking.

Good luck to all of you and I look forward to serving with you in the best and most professional Air Force in the world.





USAFA DUTY CONCEPT
by Captain Larry A. Smith
(Class of 1971)

“Looking at this subject in its largest aspect, it should be perfectly clear . . . that there must be present in the form of clearly available ideals an imaginative conception of the good at which the institution aims.”

(General S.L.A. Marshall, *The Armed Forces Officer*.)

General Marshall's quotation clearly describes the first task cadets face in learning the concept of duty, defining what the word “duty” should mean. However, this task is easier said than done since an understanding of the full meaning of duty can only be approached through a lifetime of study and experience. Even so, duty's basic philosophical essence has been codified to guide cadets in internalizing it.

At the Academy duty is discussed, along with other military virtues and ideals, in professional military education and training programs as well as academic courses. In both arenas military virtues are discussed under the concept of military professionalism. The cornerstone of duty is the responsibility that obligates each military member to the mission above *all* else. This “commitment to duty is at the very heart of the military profession” and is the focus for the development of all Academy cadets. This idea is explicitly stated in the *USAFA Professional Ethics Education Handbook for BCT*. “Cadets are at USAFA for the sole purpose of developing the qualities necessary to become competent military officers.” To become competent military officers, cadets must develop this commitment to duty above all else. The *Handbook* defines a sense of duty as “a system

of values which sets the unit's mission and the interests of the country above personal inconvenience and private gain. This is not only an intellectual exercise or transient commitment; it permeates every part of an officer's public and private life. This commitment is evident even in the way we talk about officers: We say they **are** officers not they work **as** officers."

General Marshall's description of a man with integrity also defines duty. "A man has integrity if his interest in the good of the service is at all times greater than his personal pride, and when he holds himself to the same line of duty when unobserved as he would follow if all of his superiors were present." Marshall further states, "A man of honor holds himself to a course of conduct because of a conviction that it is in the general interest, even though he is well aware that it may lead to inconvenience, personal loss, humiliation, or grave physical risk." The essence of these statements is the sense of obligation to service above self.

These quotations provide the flavor of the "Duty Concept" but the simplest and probably hardest definition to follow is contained in West Point's duty concept. The concept defines duty as "doing what ought to be done" and knowing how to assess and then decide what it is that "ought to be done."

This definition provides a useful **baseline** for USAFA. However, it needs further refinement. The West Point definition implies first the ability to decide what is the right course of action in a given situation and then the will to follow that course of action. Developing the ability to determine the proper choice is, in large part, an institutional responsibility fulfilled through education and training. But the creation of the will to follow the proper path, although

influenced by the institution and above all the example of those who represent it, is an individual responsibility. Each individual, of his or her own free will, must make the proper choice. While the institution must do everything possible to advocate the benefits of proper action and make that course the most appealing, the **individual** must make the choice. Duty is your responsibility and you will be confronted with the **consequences** of your choices, failure to do your duty will be explicitly noted, either by your commander or your conscience, probably by both. The personal accountability of duty was epitomized by General George S. Patton, Jr., “Any commander who fails to attain his objective and who is not dead or severely wounded, has not done his full duty.”

What is the proper action, especially when there are competing demands or duties? “Do I, as a cadet do my duty as an element leader when I also have a duty to study for a graded review during the same evening?” “What duties take precedence?” “If they are all equal and I share my time among them, how much effort is enough?” These questions are answered to some extent by General Robert E. Lee: “Do your duty in all things. You can never do more. You should never wish to do less.”

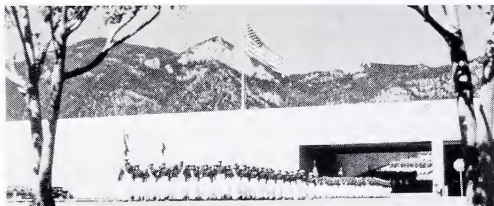
This is the only answer, not just for cadets but for commissioned officers on active duty. There are and always will be many demands on your time. That is the nature of modern society, especially for those who seek to preserve it. In the final analysis, you must establish your own priority system within the Air Force framework. Your goal should be to base your priorities on a hierarchy where the good of service comes before the convenience of self. If you make this the case, then these words of the *Cadet Prayer* will have a full and rewarding meaning to you and every USAFA

cadet: "I ask courage that I may prove faithful to duty **beyond** self." With this idea in mind, and the West Point duty concept as a baseline, internalize the following concept of duty. It forms the foundation for the Academy's efforts to emphasize duty in the Cadet Wing.

DUTY

Duty is understanding and doing what ought to be done, when it should be done, without being directly told to do so. It involves a selfless devotion to others first, whether they are members of your cadet squadron or the people of the United States who have placed their special trust in you as a military professional. Duty is your dedication to place personal interests second to the needs of the military and the people within it.

This concept of duty is the foundation of the Academy's effort to help you understand what is expected of you and to instill in you the desire to live up to those expectations. It is the basis of a concentrated effort to reinforce a sense of duty in the Cadet Wing.



THE ACADEMY'S UNCOMMON GOAL
by Colonel Robert S. Delligatti
(Class of 1959)

The essential strength of higher education in America results from the concept that, regardless of the practical skills taught, the essence of education is the mental growth of the individual. This growth includes the development of ethical values, theoretical principles, and self-knowledge. In addition to the goal of academic excellence, which we share with other schools of higher education, the Academy has an *uncommon* goal: a commitment to the profession of arms. We have the awesome responsibility to turn, in four years, high school graduates into officers prepared to fight and win an air war.

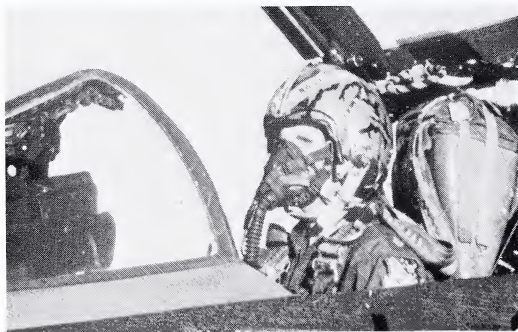
Academy graduates must be able to defend our country and to make any sacrifice required for that cause. This is the key difference between a military service school and a civilian university. The future strength of our nation, the assurance that our freedoms will endure, is directly related to our ability to fulfill this uncommon goal.

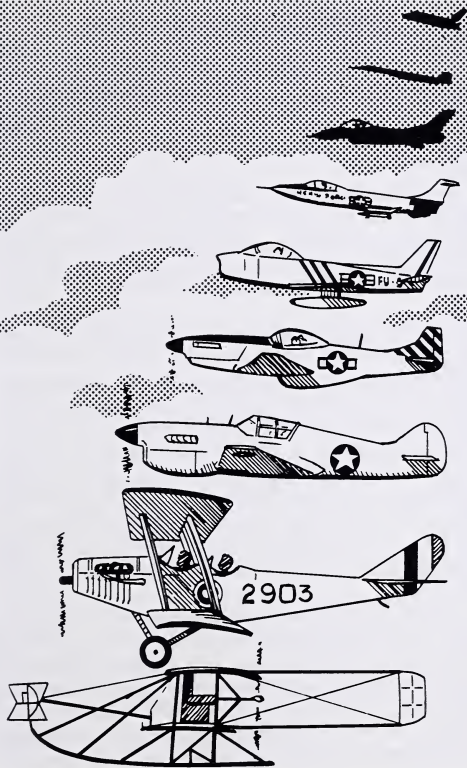
We demand more because we have to. The only way to successfully meet these challenges is dedication and knowledge. Those demands take their toll, as our attrition rates show. But those of you who make it through this program, who *are* dedicated, will graduate educated in the fullest sense of the word: aware, informed, responsible, reliable individuals.

MY CREED

by Dean Alfonge

“I do not choose to be a common man. It is my right to be uncommon. I seek opportunity to develop whatever talents God gave me—not security. I do not wish to be a kept citizen, humbled and dulled by having the state look after me. I want to take the calculated risk; to dream and to build, to fail and to succeed. I refuse to barter incentive for a dole. I prefer the challenge of life to the guaranteed existence; the thrill of fulfillment to the stale calm of utopia. I will not trade freedom for beneficence nor my dignity for a handout. I will never cower before any earthly master nor bend to any threat. It is my heritage to stand erect, proud and unafraid; to think and act myself, enjoy the benefit of my creations and to face the world boldly and say—‘This, with God’s help, I have done.’ All this is what it means to be an American.”





HERITAGE OF THE AIR FORCE

THE BEGINNINGS OF FLIGHT

Since man first lifted his eyes to the heavens he has dreamed of conquering the sky. This fascination at first took the form of myth, legend, and whimsy, but it was also the object of a great deal of study, experimentation, and plain hard work.

In the late 15th Century, for example, Leonardo da Vinci directed his genius to the observation of birds in flight. The manuscript he prepared, *The Flight of Birds*, contained sketches of flying machines and set forth principles that were to be used many years later by the designers of the first gliders.

For nearly three hundred years man made little progress toward making the dream of flight a reality. In late 18th Century France, however, the Montgolfier brothers began experimenting with hot air balloons. Displaying the wisdom and caution that would mark future aviators, the Montgolfiers chose as the first "aeronauts" a reluctant rooster, a sheep, and a duck. With the safety of flight established, "test pilot" Jean-François de Rozier took his place in the basket under the Montgolfier's balloon on 15 October 1783. The young physician soared 85 feet—to the end of the tether—and stayed airborne for nearly four and a half minutes.

The military soon found a use for the wonder of flight. The world's first aerial reconnaissance mission was conducted during the French Revolution. The American military first realized the military significance of airships during the Civil War, when observation balloons like the *Intrepid* saw sporadic use. In 1898 the Army's lone balloon was destroyed in Cuba, but not before it had directed artillery fire against

Spanish positions on San Juan Hill. While of limited military value, balloons made ascent possible, but they were not the answer to man's dream of flight.

Gliders were yet another step forward. An English inventor, Sir George Cayley, developed several model gliders between the end of the 18th Century and the middle of the 19th. These gliders would influence the work of a later experimenter, Otto Lilienthal of Germany. Lilienthal, working in the 1890's, improved and expanded Cayley's designs and eventually produced an airship that could carry him aloft. Lilienthal flew his gliders by shifting his weight—he was the first hang-glider pilot—and made more than two thousand flights before crashing fatally in 1896. His last words were: "Sacrifices must be made." Neither the balloon nor the glider were entirely satisfactory solutions to the quest for flight. Man was free from the shackles of the earth, but he could not yet wheel and soar like the birds. Before man could *fly* his airfoils had to be refined and a light weight but powerful source of propulsion discovered.

To this end Samuel P. Langley returned to da Vinci and the study of bird wings, building a wing tunnel to analyze their lift and drag. In 1896 Langley's steam-powered airplane caught the attention of several high-ranking U.S. Army officers, and he received a grant of \$50,000 to produce a full size aircraft. In December 1903 Dr. Langley attempted to launch his aircraft by catapulting it from atop a houseboat anchored in the Potomac River. The catapult system failed, and the aircraft stalled and crashed. Langley and his sponsors were stunned. Stung by Congressional and public criticism for "squandering" money, the Army adopted a skeptical attitude toward heavier-than-air craft.

Six days after Langley's failure, two unknown brothers,

Orville and Wilbur Wright, made history. The toss of a coin on the morning of 14 December 1903 decided that Wilbur would attempt the first flight. It lasted only 3.5 seconds as he stalled the aircraft shortly after lift-off. This effort was the culmination of hundreds of test flights using a glider airframe. The Wright's power plant on that chilly December day was a small gasoline engine driving two counter-rotating propellers. Their aircraft was the first canard, or tail first, plane ever designed.

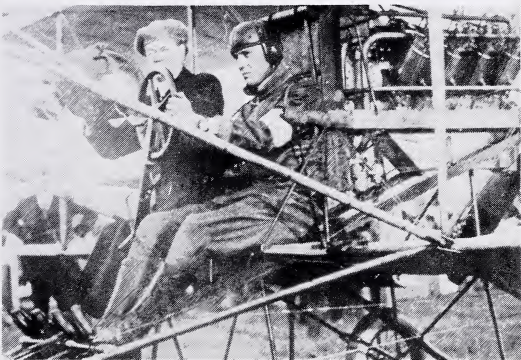
Today we celebrate 17 December as the day of man's first powered flight. The Wrights actually made the second through fifth flights on this day; the longest flight lasted 59 seconds with the aircraft traveling 852 feet. These were the world's first controlled flights of powered heavier-than-air craft.

The Wrights offered their invention to the War Department twice during 1905 but could not come to terms due to the furor created by the Langley incident. They subsequently took their aircraft to Europe, where in 1908 their demonstrations stimulated European, especially German, aviation development.

On 1 August 1907, the Chief Signal Officer of the U.S. Army established the Aeronautical Division, which consisted of one officer. American military aviation was finally underway. Prodded by President Teddy Roosevelt, the War Department called for bids on an airplane that could carry two people at a speed of 40 miles per hour for 125 miles. The Wright Brothers were awarded a \$25,000 contract for a biplane similar to the model which the Army had refused in 1905. The Army officially accepted the aircraft on 2 August 1909, five days after Orville Wright and Lt Frank P. Lahm had remained aloft for 1 hour, 12 minutes and 40 seconds.



Wright Flyer I



The Early Pioneers

By 26 October 1909, the Army's first two pilots, Lts Lahm and Humphreys, had soloed. The training site was then moved from College Park, Maryland, to Fort Sam Houston, Texas to take advantage of the better flying weather. There Lt Benjamin D. Foulois became the third Army pilot, learning from the Wrights by "correspondence." Lahm and Humphreys were returned to ground duty prior to the move to Texas, leaving Foulois as the only active pilot until 1911. Additional officers were eventually trained, and by the time the Army established the rating of military aviation in 1912, there were seventeen Army pilots.

In 1914, the Curtiss JN-1, the forerunner of the famous Jenny, was formally accepted by the Signal Corps. At the same time the Army created the 1st Aero Squadron, under the command of Capt Benjamin Foulois. This unit flew observation and liaison missions for General John Pershing in 1916 during the campaign against Pancho Villa in Mexico. The experience proved a failure, however, because the aircraft then available could not cope with the altitude, wind, and storms. All of the original eight aircraft were unflyable after a month of operation.

The wholly inadequate performance by American air power, especially in the shadow of the great dogfights being waged over the Western Front in Europe, showed just how far behind the United States had slipped in the production of airframes and engines. Once involved in World War I, Congress realized the air arm's ineffectiveness and in July 1917 appropriated \$640 million for aviation development. The money came too late to provide an effective American-equipped combat force for the Great War.

WORLD WAR I

World War I was a time of rapid growth and development for military aviation. The airplane emerged from the contempt of early military leaders to a position where the millions of men fighting below could not do without it. It was an age of men whose daring and courage brought them both fame and early death. Indeed, the aviators of the first war in the air are still remembered as heroes.

When German troops entered Belgium and France in August 1914, the airplane was a flying machine, not a fighting machine, and its job was observation. Observation played a key part in the early part of the war. The decisive battle of the Marne was fought based on reports from air observers. During this time pilots would wave cheerfully to one another as they crossed the lines. Casualties resulted from engine failure, wings dropping off, and bad landings, rather than from enemy attacks. When the "quick, decisive war" which both sides expected turned instead into a bloody stalemate, the air war became more serious. Pilots fired shots, threw bricks, and dropped hand grenades attempting to down enemy planes. Finally, machine guns were attached to the rear cockpit of two-seater aircraft, but their weight and unreliability hampered their effectiveness.

Improved aircraft, engines, and machine guns gave the airplane the potential for offensive operations, but in early 1915 there was still no acceptable method of firing a machine gun forward. The lightweight design of the plane of that period prohibited the placement of guns on the wings, outside the propeller arc, as would be done with World War II aircraft. Similarly unsuccessful was the attempt to mount a gun above the propeller arc. In this position the gun tended to

jam in the slipstream, was difficult to load or clear from the cockpit, and hampered the performance of an aircraft already difficult to fly. The ideal place for a gun was on the fuselage, in front of the pilot, somehow firing through the propeller arc.

In February 1915 two German observation planes were shot down by a French plane, firing through its propeller arc. The German air forces were thrown into panic. If the Allies perfected this technique, only a few days would pass before they cleared the skies of German aircraft. The Germans lost four more planes in the following three weeks. They realized that a new, highly effective weapon was being employed against them. A Frenchman, Roland Garros, had attached steel wedges to his propeller to deflect the seven-to-ten percent of the bullets he estimated would strike the blades. Unfortunately for the Allies, in April 1915 Garros was forced down while on a strafing mission behind enemy lines. The Germans captured his plane and discovered his secret system.

The Germans turned the problem of reproducing the design over to a young Dutch engineer named Anthony Fokker. He quickly discarded the Frenchman's system on the basis that its continued use would shake the engine from its bearings. Within forty-eight hours Fokker had developed a synchronization system which interrupted the firing whenever a blade was in front of the barrel. He mounted a gun and synchronization device on one of his E-1 Eindekkers. After proving his device to the General Staff, Fokker was told to take the plane to the front and shoot down an enemy aircraft. He protested and turned his Eindekker over to Lt Oswald Boelcke. Boelcke scored the first kill with this device in April 1915.

The German's innovation initially gave them overwhelming air superiority. The British and French planes made easy targets for the E-1s. This period of German air superiority, known then as the "Fokker Scourage," lasted until early 1916. Boelcke became the first ace by using the synchronizer.

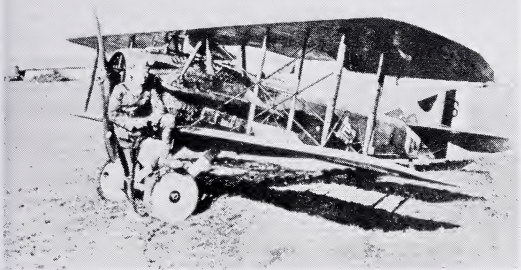
Both the British and the French tried various methods to end the Fokker Scourage. The French mounted Lewis machine guns on the top wing of their Nieuport Scouts, while the British developed a peculiar series of pusher scouts with the propeller behind the pilot. During this time the British combined some of their scouting aircraft into the world's first true fighter squadron—Number 24 Squadron, Royal Flying Corps—under the command of Major Lanoe G. Hawker. Hawker became the foremost British ace in 1916, but his career ended abruptly when he became the eleventh victim of a rising young German ace name Manfred von Richthofen. By the summer of 1916 the Allies had their own synchronization device and the Germans lost their overwhelming advantage.

The technological advantage was to see-saw back and forth for the rest of the war. The Germans came out with the Albatross in late 1915. The Albatross was powered by a superb Mercedes-Benz engine and armed with two synchronized Maxim machine guns. The D-2 and D-3 models, which appeared in late 1914, were also enhanced by the formation of *Jagdstaffels* or "Jastas" (hunting packs). By "Bloody April" 1917 the Germans again held the upper hand. The French countered, gaining air superiority by building several superb aircraft, including the SPAD 7 and the Nieuport 17. The British developed one of the finest aircraft of the war, the SE-5. In the summer of 1917 the

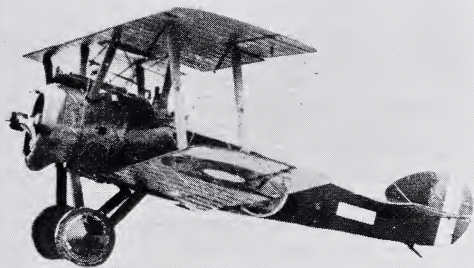
Germans made an attempt to renew their superiority with the Fokker DR-1 triplane, but the DR-1 proved too difficult for the average pilot to handle and their attempt failed. They then produced the best design of the war, the Fokker D-7. It was held in such high esteem by the Allies that it was specifically banned after the war by the Treaty of Versailles. During this period the British developed a fine series of aircraft built by the Sopwith Company. The most notable of these aircraft was the Sopwith Camel. The Camel, named for the humped fairing over the cowlings, was an extremely maneuverable plane—having the capacity to turn almost in place. It accounted for more kills than any other aircraft of the war. Camel pilots claimed this record was due to circumstances. Their plane could neither outrun nor outclimb a Fokker; it had to shoot them down.

The war in the air was not limited to observation and swirling dogfights. It also saw the beginnings of strategic bombing. By 1916 both sides realized that aerial bombardment was necessary. The Germans held the lead in this area for most of the war. They carried out attacks on France and Britain, starting in January 1915 and continuing through the end of the war. The original bombers were the lighter-than-air rigid airships called Zeppelins. These airships caused a great deal of panic but not much damage. They did, however, divert a large number of planes and men from the front protection of London. The use of heavy anti-aircraft guns and the incendiary bullet led to the eclipse of the Zeppelin.

The Germans were more successful with their long-range bombers such as the Gotha and the giant R-class bombers, which had a wing span of 138 feet. (The Boeing 707/KC-135 has a 131 foot wing span.) The British also developed a



Spad 13



Sopwith Camel

strategic bombing force, the Independent Air Force (IAF), but the war was ended before the IAF could begin full-scale operations.

Although the air war was more glamorous than the war in the trenches, it was by no means less dangerous. The average life expectancy of a fighter pilot in 1916 was three weeks. The pilots, always under the specter of violent death, were forced to push themselves to the limit in machines that reeked of engine oil and gunpowder. The aircraft of the day were extremely temperamental; they would shed wings, stall out and spin without warning. The planes were highly flammable and often burned with the helpless pilot inside. Until near the end of the war, none of the pilots carried parachutes. This was due partly to their size and weight and partly to the insistence of ground-oriented superiors who thought pilots would be prone to jump from "perfectly good airplanes." It also was due in part to the prejudices of the "macho" pilots themselves, who thought parachutes were "sissy."

With such terrible odds against them, those pilots who survived and amassed large numbers of "kills" were often idolized by the public. The French "Ace of Aces," Corporal George Guynemer, captured the hearts of Frenchmen by shooting down 53 enemy aircraft. He was shot down eight times, surviving each time. Guynemer was one of the few World War I pilots to use a cannon, which he sighted with tracers from his machine gun. He disappeared mysteriously while on a mission over Belgium in September 1917. Among the British heroes were the young, audacious Albert Ball and James McCudden, scoring 43 and 58 kills respectively. Ball flew into a cloud one day and was never seen again. McCudden was killed when he stalled and crashed on a routine takeoff. With the death of Max Immelmann on 18

June 1916, the German public turned to Oswald Boelcke as their hero. Boelcke commanded Jasta Two. He was an outstanding leader, and many of the great aces of Germany were at one time his "cubs." Ironically, Boelcke was killed in a mid-air collision with his best friend. Boelcke died with forty victories to his credit.

The highest scoring ace of the First World War was Baron Manfred von Richthofen, the "Red Knight of Germany." With 80 confirmed victories, Richthofen was a hunter who enjoyed the chase in the sky. Having been one of Boelcke's cubs, Richthofen was a master tactician, skillful pilot, and excellent marksman. He was killed by the ground fire of an Australian machine gun crew. Richthofen was so highly respected that the British buried him with full military honors.

The second leading ace of the war was French Captain René Fonck. An extraordinarily skilled and egotistical pilot, Fonck scored over 75 victories, and in all his years of fighting, he was hit only once. British Major Edward "Mick" Mannock was the third ranking ace and probably the greatest air fighter of the war. Mannock was consumed with an almost pathological hatred of Germans, and he delighted in shooting down as many as he could. Mannock was also a brilliant flight leader and took great pride in bringing his entire flight home. He would often give his kills to inexperienced pilots, knowing that their chances for survival went up greatly after receiving credit for their first victory. Mannock was killed by a German infantryman's bullet. His final tally was 73 aircraft.

In fourth place was Canadian Lt William "Billie" Bishop with 72 kills. He became an ace in two weeks after downing four Albatrosses and a balloon. In June of 1918, the General

Staff told Bishop that he would be taken from the front in twelve days. In the few days that remained he shot down 25 more German planes and ended his career with more decorations than any man alive at that time.

A German ace with 22 victories took command of the "Flying Circus" (the nickname given von Richthofen's unit by the British) after von Richthofen's death. This man, who eventually rose to command the Luftwaffe during World War II, was Hermann Goering.

On 6 April 1917 the United States entered the Great War, possessing not a single combat aircraft, yet vowing to fill the skies over Europe with "a cloud of planes." Brigadier General William "Billy" Mitchell had been observing the air war in Europe before the U.S. entry and thus was the logical choice for the position of Chief of the Air Service, First Army. Mitchell gained a reputation as a flamboyant, outspoken commander and aerial tactician. He devised and executed, with stunning success, a plan that put 1500 planes over the battlefield in support of American ground attacks at St. Mihiel.

A number of excellent American flyers were involved in the war long before April 1917. They were the members of the Lafayette Escadrille. The best among these volunteers was the famous Gervais Raoul Lufbery. Lufbery was commissioned a major in the American Air Service after the U.S. entered the war. He led the 94th "Hat in the Ring" Aero Squadron, instructing future greats like Rickenbacker in the intricacies of aerial combat. On 18 April 1918, Lufbery decided that Rickenbacker and two other officers were ready to patrol on their own. They took off, leaving Lts Alan Winslow and Douglas Campbell on alert in case they were chased home. The patrol returned without incident, but as



Rickenbacker with the 94th "Hat in the Ring" Sq.

they landed two German aircraft were reported in the area. Winslow and Campbell took off immediately and within a matter of minutes shot the two Germans out of the sky. The first went to Winslow. The other, seconds later, fell to Campbell, for the first American victories of the war. On 18 May 1918, Lufbery jumped to his death when his plane caught fire. His career ended with seventeen official and as many as 73 unconfirmed kills.

From September through November 1918, Captain Eddie Rickenbacker commanded the 94th, showing the stuff that earned him the title of America's "Ace of Aces." Before the war he had been a champion race car driver, and his first assignment was as General John J. Pershing's chauffeur. The

lure of combat aviation, however, was too great to resist. His leadership, like that of Mannock (he too gave kills away), went a long way toward making the 94th an effective fighting unit. Rickenbacker ended the war with 26 official kills, but he had nearly the same number of unconfirmed victories. These accomplishments are all the more remarkable considering he compiled his score in only four months. Captain Rickenbacker was the first flyer to earn the Medal of Honor, awarded for conspicuous bravery in the face of 7 to 1 odds during an engagement on 25 September 1918.

Another pilot who earned the Medal of Honor during World War I was Lt Frank Luke, Jr., the "Arizona Balloon Buster." Luke was an undisciplined maverick, without much technical skill, but he accomplished one of the most impressive feats of the war: he flamed fifteen enemy balloons and three airplanes in the space of seventeen days. His fascination with attacking balloons, which most pilots considered more dangerous than engaging the best German pilots, led to his death. On the evening of 29 September 1918, Luke took off alone in search of German "Drachen." He found and destroyed three balloons and was making his trademark treetop escape when he was jumped by German fighters. He sent two of them down, but was hit by ground fire and forced to land. He strafed and killed six Germans during this approach to land, cleared the wreckage of his plane, pulled a revolver to defend himself, and was killed in a hail of bullets from approaching troops. His final action brought his tally to eighteen and earned him the Medal of Honor.

On 11 November 1918, when the Armistice took effect, the United States had 45 squadrons at the front, manned by a

total of 767 pilots, 481 observers, and 23 aerial gunners. Eighty Americans had earned the title of "Ace," and the Air Service accounted for the destruction of 781 enemy aircraft and 73 balloons. There was little doubt that America had discovered a potent weapon.



Lt Frank Luke, Jr.; the "Arizona Balloon Buster"



“Homing in for the kill”

BETWEEN THE WARS

The post-World War I period was a time of organizational growth for the Air Service. It was marked by experimentation and innovation in aircraft design, by achievements of air pioneers, and by continued controversy as the young Air Service attempted to gain its independence from the Army.

Demobilization hit the Air Service as hard as it hit the Army and Navy. The wartime Air Service of 200,000 men had been reduced to a mere 10,000 by the summer of 1920. Congress canceled wartime orders for 13,000 aircraft and 20,000 engines within days of the Armistice. Cancellation of orders contributed to the eventual liquidation of ninety percent of the wartime aircraft industry. Two years after the war ended, Congress passed the Army Reorganization Act of 1920. Despite loud protests from Brigadier General Billy Mitchell, the Act confirmed the Air Service as a combatant arm of the Army and parcelled out its aircraft among Army ground commanders.

Mitchell, who became the Assistant Chief of the Air Service, was not one to give up to the fight for independence so easily. He reasoned that the Air Service would stand little chance of gaining independence unless it had a mission that neither the Army nor the Navy could accomplish. Since the United States had entered a period of political isolation, Mitchell felt that he would be unable to convince either the War Department or the defensive-minded Congress that the Air Service should be granted independence on the basis of the strategic bombing of civilian populations and enemy industry. (This was the doctrine that Mitchell, Italian air

leader Air Marshal Giulio Douhet, and British Air Marshal Sir Hugh Trenchard believed should be the guiding principle of aerial operations in future wars.) He chose instead to argue that the Air Service could accomplish the mission of coastal defense better than the Navy. His argument was based on his belief that the airplane had made the battleship obsolete. After several months of debate, the Navy gave Mitchell a chance to prove his claims in the summer of 1921. His crews, flying Martin MB-2 bombers, sent three captured ships to the bottom of the ocean. The last ship sunk by Mitchell's crews was the "unsinkable" ex-German battleship, the *Ostfriesland*.

Despite these victories, Mitchell failed in his attempt to gain independence for the Air Service. For his efforts he was transferred to Texas where Army leaders hoped he was far enough away from Washington to stay out of trouble. Billy Mitchell would not keep quiet. When the Navy airship *Shenandoah* crashed in September 1925, Mitchell called a press conference and issued a prepared statement accusing his superiors of "incompetency, criminal negligence, and almost treasonable administration of the National Defense." At the request of President Coolidge and Secretary of War Weeks he was court-martialed and found guilty of "conduct unbecoming an officer and gentleman." He was ordered to forfeit all pay and allowances for five years. Instead of suffering this disgrace, Mitchell resigned. As a civilian he continued to voice his beliefs about a separate Air Force until his death in 1936.

Bill Mitchell was not the only air leader who believed that the Air Service should be removed from Army control. The Chief of the Air Service, Major General Mason W. Patrick,



Brigadier General William "Billy" Mitchell

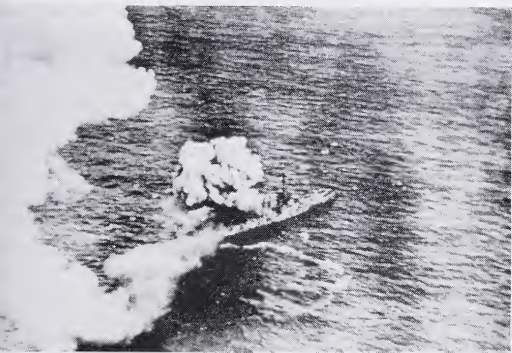
unlike Mitchell, directed his efforts not to the goal of complete independence but to the objective of attaining “the greatest degree of autonomy” for the Air Service under the existing organization. Basing his arguments largely on the evidence gathered by the Lampert Committee and the Lassiter Board, two groups that had investigated Air Service operations and made a series of recommendations, in 1925 Patrick urged the creation of an Air Corps with autonomy similar to that enjoyed by the Marine Corps within the Navy Department. His efforts bore some fruit, for Congress eventually passed the Air Corps Act in 1926. Although the Act did not radically change the organization of the Air Service, it did give the air arm a new name. The name strengthened the concept that the air arm was an offensive arm rather than support branch. The Act also insured that the air arm would be better represented in the War Department.

The name change from Air Service to Air Corps and the greater representation within the War Department provided the impetus for a number of organizational developments. Wright Field, Ohio, the location of the Material Division, became the center of extensive research and development which helped improve aircraft design and performance. The “West Point of the Air” was established at Randolph Field near San Antonio, Texas. Here, under the watchful eye of Brigadier General Frank P. Lahm, aviation cadets trained to become pilots.

The doctrine of strategic bombardment, which Mitchell had preached during the 1920s, was still on the minds of many Air Corps leaders in the early 1930s. Men such as Major Hugh Knerr, commander of the Second Bombardment Group, and Lt Colonel Clarence Culver, commander of the



Martin MB-2

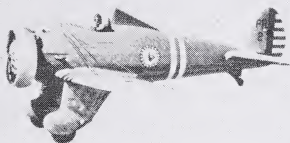


Sinking the German battleship *Ostfriesland*

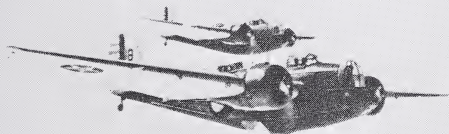
Second Bombardment Wing, persisted in their requests that the Army purchase bombers capable of accomplishing the doctrine. Their requests were partially fulfilled in the early 1930s when the Army purchased the Boeing B-9 and the Martin B-10. Both were superior to any bomber the Air Corps had yet operated. The Martin B-10 was a major breakthrough. It was a mid-wing, all metal airplane with retractable landing gear. Its top speed was 207 miles per hour, making it the fastest bomber in the world. Although these bombers did not completely fulfill the air theorists' hopes for a true strategic bomber, they at least represented steps in the right direction.

The bomber that would meet those expectations resulted from an Air Corps design competition for a multi-engined bomber capable of carrying a 2,000 pound bomb load over a range of 1,200 miles at a speed of 200 miles per hour or better. All but one of the manufacturers competing for this contract assumed that Air Corps wanted another twin-engine bomber. Boeing engineers decided to gamble and designed a four-engine bomber. In September 1934, the Boeing Model 299, later to be designated the XB-17, flew for the first time. The XB-17 had a wing span of 103 feet; a service ceiling of 30,000 feet; could carry a load of 2,500 pounds over a distance of 2,260 miles; and had a top speed of 250 miles per hour. This was the bomber of the Air Corps' dreams. Despite the XB-17's outstanding performance and capabilities, the Army purchased the cheaper twin-engine Douglas B-18 in quantity. Only a few B-17s were added to the inventory.

The struggle for independence from the Army surfaced again in 1934. A series of training crashes and the dismal failure of the Air Corps to carry air mail, resulted in a



Boeing P-26 Peashooter



Martin B-10

committee to study all aspects of military aviation. Headed by former Secretary of War Newton D. Baker, the Baker Board concurred with the earlier recommendation of the Drum Board that a General Headquarters (GHQ) Air Force be created. On 31 December 1934, the War Department accepted this advice and appointed Brigadier General Frank M. Andrews the first commander of the GHQ Air Force. For the first time a centrally controlled strike force was under the control of a flyer. With Andrews in command of all Army combat planes, the air arm had taken a giant step toward autonomy.

In May 1938, in response to Hitler's growing power in Europe and the rise of Japan in the Far East, the United States began to rearm. President Roosevelt's first concern was the aircraft industry. He decided to build it up so that in the event of war in Europe the United States could protect herself as well as the Western Hemisphere. Thus the GHQ Air Force was allocated money to expand its force to 5,500 airplanes by 1941. This meant the Air Corps would be able to purchase over 3,200 aircraft in the next two years. After France fell in the spring of 1940 the number was increased to 18,000. Without much debate, Congress allocated the money for this expansion.

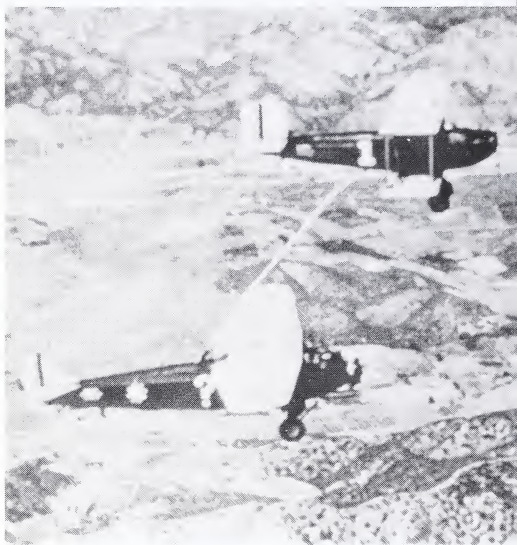
As a result of this rapid expansion, the deficiencies of the GHQ Air Force/Air Corps organization became obvious to the leaders of the air arm. Secretary of War Henry L. Stimson, in turn, was made aware of these deficiencies and pressured Army leaders to correct them. The Army responded with Army Regulation (AR) 95-5 on 20 June 1941. This regulation created the Army Air Forces (AAF) in place of the GHQ Air Force and Air Corps—the latter had established the AAF as a quasi-independent air organization.

This gave the air arm the organization that would carry it through World War II.

On 9 July 1941, as the United States moved slowly toward war, Colonel Harold L. George, Lt Colonel Kenneth N. Walker, and Majors Laurence S. Kuter and Haywood S. Hansell completed what would become the AAF's 'blueprint for action.' This blueprint, entitled AWPDP-1 (Air War Plans Division, Plan-1), would be the plan by which the AAF would conduct operations in the coming war. AWPDP-1 called for the destruction of German war industry by high altitude, daylight, precision bombardment. AWPDP-1 went on to list the number of medium, heavy, and very heavy bombers necessary to accomplish the goal. Thus, when war was declared, the AAF was ready with a wartime organization and plan.

The changes made in the organization of the military air arm were not the only aviation news of the inter-war period. Due to the advance in aircraft technology, members of the Army air arm set new altitude, speed, distance, and endurance records. Lieutenants Cy Bettis and Jimmy Doolittle set speed records in winning the Pulitzer and Schneider Cup Races in 1925. A plane designed by Anthony Fokker, piloted by Maj Carl Spaatz, Capt Ira Eaker, Lt Elwood Quesada, and crewed by three other men, set an endurance record in early 1929. The plane they flew, the "Question Mark," was in the air for 150 hours, 40 minutes, and 15 seconds. During this time, the airplane was refueled 43 times, taking on 5,660 gallons of gas. On 6 April 1924, four Douglas-built aircraft, aptly named "World Cruiser," set out from Seattle on the first round-the-world flight. Two planes returned on 28 September after flying 26,000 miles in

175 days. Although all these events were significant, none could compare with Charles A. Lindbergh's solo flight across the Atlantic in 1927. At the controls of his plane for 33½ hours, Lindbergh fought fatigue and cold to become the first person to fly solo, non-stop across the Atlantic. (He was actually the 19th man and the 12th flight to cross the ocean.)



Air refueling of the “Question Mark”

WORLD WAR II

The airplane underwent considerable improvement in the two decades after the First World War. The theories of employment of combat aircraft had developed even further. In World War II, the strategic bombardment concepts of Mitchell, Douhet, and Trenchard would be tested. In the development of air power doctrine, the experiences of World War II would have a lasting influence on future Air Force leaders.

On 1 September 1939, the Second World War opened with the Nazi invasion of Poland. Using the *blitzkrieg* ("lightning war"), a tactic that relied on a highly mechanized army and a tactical air force, the Germans overcame Polish resistance in sixteen days.

Germany's air arm, the Luftwaffe, was designed primarily as a ground support air force. The dive bomber was its primary close support weapon, and Germany's principal dive bomber was the Junkers Ju-87 Stuka. The Stuka was a fearsome weapon when the air around it was free of hostile fighter planes. The fighter arm of the Luftwaffe provided this environment during Hitler's early campaigns.

By July 1940, Poland, Norway, Denmark, Holland, Belgium, and France had fallen victim to Germany's mechanized units and air force. Great Britain stood alone against the Nazi-dominated continent. The moat-like English Channel was a good defense against the German Army, but it did not stop the Luftwaffe. If the British wished to stop the invasion of their homeland, they would first have to stop the Luftwaffe.

Reichsmarschall Hermann Goering's Luftwaffe was a tactical arm, ill-suited to the task of waging a strategic



"Fighter Pilot"

bombing campaign, but it was forced to do just that against the prepared defenses of the Royal Air Force Fighter Command. Under the superb guidance of Air Chief Marshal Sir Hugh Dowding, the British devised an air defense system to thwart the Luftwaffe. A series of early warning radar stations located German aircraft on their way to bomb the United Kingdom. These radar stations would pass their data to Fighter Command and an appropriate number of Spitfires or Hurricanes would intercept the Nazi raiders. Thus, when the Germans launched *Adlerangriff* ("Eagle Attack") on 13 August 1940, they met determined resistance. On 7 September, the Luftwaffe made a fatal error by switching its offensive from RAF ground installations (radar sites and airfields) to the city of London because Hitler demanded retaliation for an RAF raid on Berlin. By mid-September, the German air assault had failed because of appalling losses to Fighter Command's excellent defense system and gallant pilots.

The British pilots were the heroes of the nation. "Never in the field of human conquest has so much been owed by so many to so few," Prime Minister Winston Churchill said of the Battle-of-Britain pilots. Squadron Leader Douglas Bader was one of the "few." He had lost both legs before the war, but despite this handicap, Bader became an ace with 22½ victories. The "indestructible" Al Deere was shot down seven times and survived two mid-air collisions. He evened the score by destroying 22 German aircraft.

The Germans had their heroes, too. Major Werner Molders shot down 100 opponents by November 1941. As a result, he became the first General of the German Fighter Arm. The second and last leader of the Fighter Arm was Molder's friendly rival, Major Adolf Galland. Unlike

Molders, he survived the war with 70 victories.

During the course of the war, the Luftwaffe produced aces with even more kills. The Messerschmitt Me-109, the Focke-Wulf Fw-190, and the Messerschmitt Me-262 were the mounts of 99 pilots scoring over 100 victories each. The leader of these aces was Major Erich Hartmann, known as “the Black Devil of Ukraine.” Hartmann scored 352 victories, all but seven of which were Russian. Major Gerhard Barkhorn finished second with a tally of 301 aircraft. In the tradition of von Richthofen, the Luftwaffe had produced some very talented fighter pilots.

After the Battle of Britain, the RAF began an intense campaign of night attacks on German cities. The British used the cover of darkness to prevent prohibitive bomber losses. This tactic evolved after the Germans shot down impressive numbers of RAF bombers during the daylight raids of August 1940. The USAAF, which still remained at peace, continued to believe in the concept of precision daylight bombing.

After the Japanese attack on Pearl Harbor on 7 December 1941, the United States found itself engaged in a two-front war. Germany, considered the stronger enemy, took precedence. The newly created Army Air Forces prepared to wage a campaign of high altitude, daylight, precision bombing against the war industries of the Third Reich. The Chief of the USAAF, General Henry H. Arnold, appointed Major General Carl Spaatz to command the U.S. Eighth Air Force—the first American strategic bomber force in Europe. Spaatz’s bomber commander, Brigadier General Ira Eaker, launched bomber raids against France and Germany beginning in August 1942. American air leaders were still convinced that tight bomber formations and heavy defensive armament would protect the Boeing B-17 Flying Fortresses



Boeing B-17 Flying Fortress

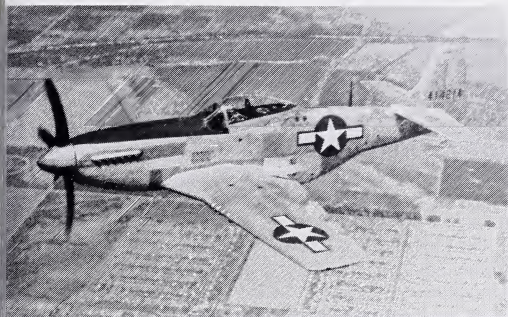


Consolidated B-24 Liberator

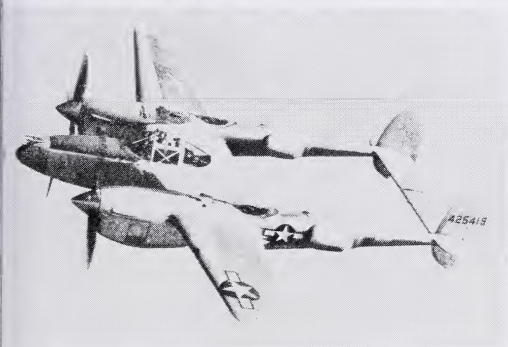
and Consolidated B-24 Liberators on their daylight operations. In 1943, the Americans and British began joint strategic bombardment operations against Germany. This effort was known as the CBO—the Combined Bomber Offensive.

The initial American bomber assaults deep into Germany met with disaster. On 14 October 1943, the USAAF launched two groups of B-17s to attack the ball bearing plants of Schweinfurt, Germany. Twenty-eight of the B-17s were knocked out of the sky before the aircraft reached their target. Another 32 fell victim to the Luftwaffe on the way back to their English bases. An additional seventeen B-17s sustained heavy damage and were eventually declared lost. A further 121 sustained less serious damage. Thus, of the original 291 aircraft, no fewer than 198 had been damaged or destroyed. This raid, combined with the losses absorbed on three other raids during the same week, cost 148 bombers and their crews. These results caused the Americans to seriously question their aerial tactics. The USAAF would strike no targets deep in Germany for the rest of 1943.

USAAF leaders, despite these tremendous losses, were not ready to discard the doctrine of strategic bombardment. General Arnold felt that a fighter with sufficient range to escort the B-17s and B-24s into the heart of Germany was the answer to the attrition of the bomber war. Eighth Air Force attempted to increase the range of the available fighter planes, the Lockheed P-38 Lightning and Republic P-47 Thunderbolt. These airplanes, fitted with drop tanks, proved to be only a stop-gap measure. It was the arrival of the North American P-51 Mustang that turned the tide. The P-51 was able to escort the bombers to the farthest reaches of Germany.



North American P-51 Mustang



Lockheed P-38 Lightning

The Eighth resumed its raids in late February 1944, with what is now known in Air Force history as "Big Week." The attacks launched during "Big Week" were aimed at the German aircraft industry. It turned, however, into a prolonged and bitter struggle between the escort fighters and the Luftwaffe for control of the air. This struggle continued throughout February and March. By April 1944, the results were obvious: the American fighters had gained control of the air.

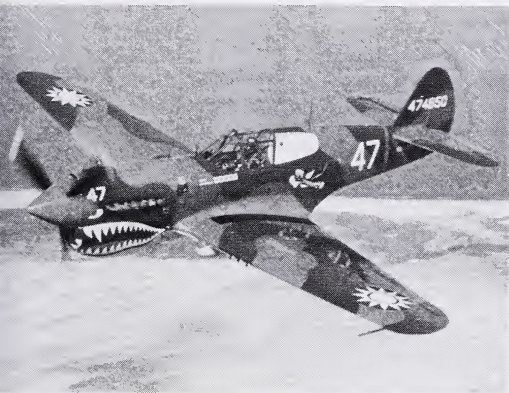
Because of this hard-won air superiority American and British bombers were able to target virtually any factory or oil refinery in Germany for the rest of the war. By April 1945, the CBO had significantly hampered the German war machine.

The Allies, like the Germans, had successful fighter pilots. The leading British ace of the European Theater was Group Captain J.E. "Jonnie" Johnson. Johnson compiled a score of 38 victories, all of them single-engine fighters. General Ivan Kozedub led the Soviet Air Force with 62 confirmed kills. The top American ace in Europe was Colonel Francis S. Gabreski with 28 victories.

Halfway around the world in the Pacific Theater another air war was being conducted by bombers and fighters of the USAAF. As in Europe, the American bombers attempted a strategic bombing campaign against the Japanese homeland. In the Pacific the campaign was delayed because the bases held by the USAAF at the beginning of the war were too far from Japan for even the B-24 to strike at the Home Islands. The strategic bombing of Japan would have to wait until ground or amphibious forces could secure airfields nearer Japan.



North American B-25 Mitchell



Curtiss P-40 Warhawk

The first American air unit to see action against the Japanese was the American Volunteer Group (AVG), better known as the Flying Tigers. The unit was formed before Pearl Harbor by a group of American pilots interested in aiding the Chinese in their war against Japan. Flying Curtiss P-40 Warhawks emblazoned with a shark's mouth on the cowling, the Flying Tigers had destroyed 286 aircraft by the time the United States entered the war in December 1941. The commander of the Flying Tigers, Major General Claire Chenault, handed the AVG over to the USAAF in the summer of 1942.

Early in the war the U.S. began supplying our Chinese ally with arms to fight the Japanese. The Japanese Army quickly captured all the roads over which these supplies traveled. This forced the U.S. to supply the Chinese completely by air. Flying over the Himalayan Mountains from bases in India, Douglas C-47 Skytrains and Curtiss C-46 Commandos kept the Chinese army supplied for almost the entire war. The gallantry of these transport pilots cannot be measured in aerial victories or bombing results, but had it not been for their efforts, China might well have been overrun.

The aircraft carrier quickly became one of the premier weapons in the Pacific Theater. Its importance was demonstrated on 18 April 1942 when Lt Colonel James H. Doolittle led sixteen North American B-25 Mitchell bombers on a daring raid on the Japanese mainland. Although this raid caused insignificant material damage, it did boost the sagging morale of the American people, and caused the Japanese to devote more resources to home defense. The aircraft carrier proved to be the decisive weapon in numerous major battles. The Battle of the Coral Sea was the first naval battle in history where all fighting took place between the



Douglas C-47 Skytrain



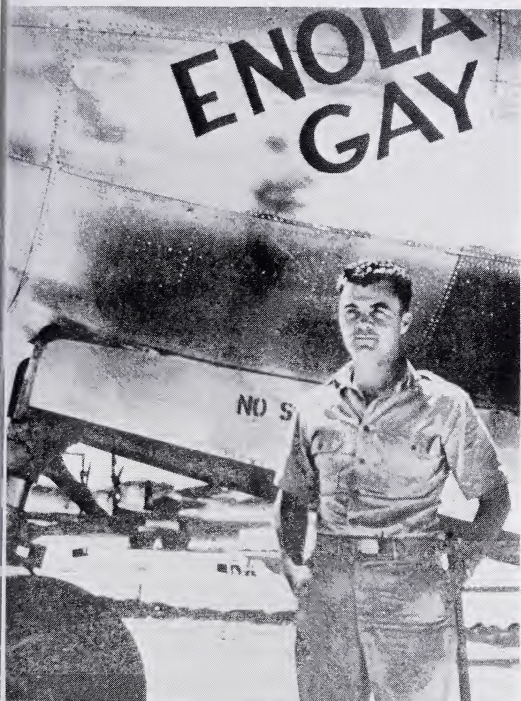
Republic P-47 Thunderbolt

aircraft of opposing fleets. The surface vessels engaged in this battle never saw each other. In June 1942, at the Battle of Midway, which was the turning point of the Pacific War, U.S. Navy pilots sank four Japanese carriers, destroying forever any hopes the Japanese might have had of winning the war.

The USAAF had several distinguished pilots fighting in the Pacific. Major Richard I. Bong, America's Ace of Aces, had forty victories. Bong lived through the ferocious combat of the Pacific only to be killed testing a jet fighter, the Lockheed XP-80, in August 1945. Another distinguished pilot was Major Thomas P. McGuire, victor over 38 Japanese aircraft. McGuire died in combat attempting to aid a comrade. Both McGuire and Bong received the Medal of Honor.

The Navy and Marines had pilots of which they too could be proud. Captain David McCampbell, the top Navy ace of the war with 34 victories, set a record when he shot down nine Japanese aircraft during a wild naval battle known as the "Marianas Turkey Shoot." McCampbell received the Medal of Honor for this accomplishment. Lt Colonel Gregory "Pappy" Boyington was the top Marine ace of World War II. He destroyed six aircraft while a member of the AVG. He later increased his total to 28 as the commander of the "Black Sheep" Squadron.

The Japanese also had their aces. Their top ace was Chief Warrant Officer HiroYashi Nishizawa, with 87 kills. Nishizawa, a true master of aerial combat, was never touched in a fight. He died in a transport plane which was shot down on its way to Japan. The leading Japanese ace to survive the war was Suburo Sakai, who ended the war with 64 kills. On one occasion, he piloted his aircraft 200 miles to home base



Colonel Paul W. Tibbetts with "Enola Gay"



Boeing B-29 Superfortress

after he had been seriously wounded. He recovered from those wounds to fly again.

The principle Japanese fighter was the highly maneuverable Mitsubishi A6M Zero-sen. This plane gave American pilots a great deal of trouble early in the war. By 1943, however, new American fighters, such as the Grumman F6F Hellcat and P-38, evened the score. The P-38 was the design of Clarence "Kelly" Johnson, who also designed the F-80, U-2, and SR-71. The P-38 was the mount of both Bong and McGuire. The F6F was the first aircraft designed specifically to out-perform the A6M Zero-sen. A third American fighter that helped the U.S. gain superiority was the Chance-Vought F4U Corsair. The Corsair is best

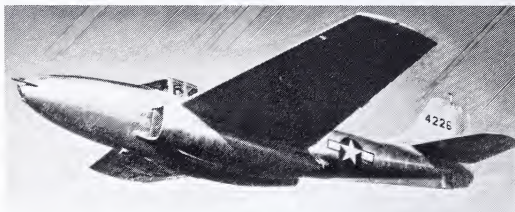
remembered for its inverted gull wing. It was the plane "Pappy" Boyington and his "Black Sheep" flew.

The strategic bombing campaign finally got underway in earnest in late 1944 when the Marines captured the Marianas Islands. Major General Curtis E. LeMay commanded the Marianas-based B-29s; it was through his direction that these Boeing Superfortresses exacted a terrible toll from the Japanese. LeMay's 21st Bomber Command conducted the fire bombing raids on Japanese cities. One such raid left sixteen square miles in the center of Tokyo completely barren. Japan could not take this kind of punishment for long, but it was the atomic bombs of August 1945 that forced the Emperor to capitulate. On 6 August 1945, the world entered the age of atomic war when a B-29 named "Enola Gay" dropped the uranium-core "Little Boy" on the city of Hiroshima. Three days later, "Bock's Car" dropped a second atomic bomb, the plutonium-core "Fat Man," on Nagasaki. On 14 August 1945 Japan surrendered to end World War II.

ARMING FOR THE COLD WAR

In 1945, the United States was the only country in the world that had the expertise to construct and deliver atomic weapons. Many leaders felt that all we needed for defense was a strategic bomber force capable of delivering these weapons. Therefore, after World War II, almost all of the AAF, with the exception of the B-29s, was dismantled. By 1946, the AAF had fallen from a wartime strength of 2,000,000 men to just over 300,000. The Strategic Air Command (SAC) was formed in 1946 to deliver atomic

weapons, but SAC did not become a viable deterrent until General Curtis LeMay assumed command in 1948. Using the B-29 and the Consolidated-Vultee (Convair) B-36 Peacemaker, LeMay organized the most destructive air fleet the world had ever seen.



Bell P-59 Airacomet

Research and development was emphasized during the post-war period. Probably the most spectacular development of the immediate post-war years occurred on 14 October 1947, when Captain Charles E. Yeager piloted the Bell X-1 to speeds in excess of Mach 1. Captain Yeager became the first man to fly faster than the speed of sound. The Bell X-3 was a follow-on to the X-1, further exploring the high speed range, testing wing and engine inlet designs. The Northrop X-4 Swallow tested the dynamics of an aircraft without a horizontal stabilizer, in effect, a flying wing. The Bell X-5 was the first American airplane to test the aerodynamics of a swept-wing. Another airplane tested during this period was the Northrop YB-49 Flying Wing. The YB-49, piloted by Captain Edwards, crashed shortly after takeoff from Muroc Dry Lake Test Center. In his honor, the Test Center was renamed Edwards Air Force Base. Edwards is presently the



General Curtis E. LeMay

base where the Air Force tests new and experimental aircraft.

Immediately following World War II, the struggle for an independent air arm resumed as Congress began a reconsideration of the nation's defense structure. With President Harry Truman's prodding, Congressional efforts culminated in the National Security Act, signed into law on 26 July 1947. The Act established the Department of Defense and created the United States Air Force as one of three co-equal services. Billy Mitchell's Air Service had finally gained its independence.

Executive Order 9877, signed the same date as the National Defense Act, outlined the main functions of the three services. The Air Force was assigned the responsibility for conducting strategic warfare—the same mission that had gained it its independence.

America had busied itself "organizing for defense," because the first chills of the Cold War were being felt in Europe. By the end of World War II, the Soviet Union had occupied Eastern Europe, including the zone of East Germany that included Berlin. In 1948, in a test of Western will, the Soviets blockaded Berlin. By the end of June, they had cut off all rail, barge, and road traffic leading to Berlin from Germany's Western-occupied zones. The only remaining avenue was air traffic. The Allies had been guaranteed three twenty-mile-wide air corridors into the city, and General Lucius D. Clay, the U.S. military governor of the beleaguered city, decided to resupply the city by air transport.

What came to be known as the Berlin Airlift began on 26 June 1948, when Air Force C-47s lifted off from Wiesbaden Air Base with a cargo of milk, flour, and medicine bound for Berlin's Templehof Air Base. By 20 July, 54 C-54s and 105



onvair GRB-36 Peacemaker with parasite XF-84F



Captain Charles E. Yeager piloting the Bell X-1A



Douglas C-47 Skytrains at Berlin's Tempelhof Air Base

C-47s were airlifting 1,500 tons of supplies a day into Berlin. General Hoyt S. Vandenberg, Commander of United States Air Forces Europe, ordered 72 more C-54s into the airlift when it became apparent that the Soviets were not going to lift the blockade. By December, "Operation Vittles" planes were flying around the clock to bring supplies to Berlin. At the height of the joint British-American effort, cargo planes, many piloted by men who had hauled decidedly different loads over Berlin a short three years earlier, landed and took off at the rate of one every three minutes. The airlift continued through a long, cold winter and a dismal, rainy spring. Finally, on 12 May 1949, the Soviets lifted the blockade. The Berlin Airlift had accomplished what few thought possible: it had supplied an entire city with its basic necessities completely by air.

THE KOREAN WAR

The peace that reigned after World War II was a tense, unpredictable one. Intense competition saw each side jockey for position. On 25 June 1950, the Cold War turned hot when North Korean troops, led by Soviet-built T34 tanks, supported by Soviet-supplied Yak fighters and brandishing Russian-made rifles, crossed the 38th Parallel into South Korea. President Truman sent aid immediately and went directly to the United Nations to obtain the support of the rest of the world in his effort to stop North Korean aggression.

In charge of all Air Force activity in the Pacific area, the Far East Air Force (FEAF) under Lt General George E. Stratemeyer was involved in the police action from almost the very beginning. While protecting the air evacuation of American citizens from the South Korean city of Seoul, a flight of F-82 Twin Mustangs intercepted five Yak-9 fighters. The F-82s acted swiftly and within minutes three enemy fighters had been shot down, with the first victory of the war going to Lt William G. Hudson.

The first air battle of the war was like all the rest of the war in the air fought over Korea—with the exception of a small area over northwest Korea. This area, known as “Mig Alley,” was the only area where North Korean and Chinese pilots dared to challenge FEAF’s control of the air.

When war broke out, FEAF’s fighter armament consisted of the F-82, the F-51, and the F-80. Initially successful in air-to-air and air-to-ground roles, these aircraft were soon outclassed by the advent of the Russian-built MiG-15. At the time of its introduction, the MiG-15 was the best fighter in the world. On 1 November 1950, six MiG-15s attempted,

unsuccessfully, to jump a flight of Mustangs just south of the Yalu River. A week later the MiGs bounced a flight of F-80s. The F-80s, although technologically no match for the Russian fighters, engaged them. Lieutenant Russell J. Brown shot down an enemy fighter, thus becoming the first USAF jet fighter pilot to score a victory.

Most air-to-air combat between MiG-15s and F-80s or F-84 Thunderjets was generally decided in favor of the MiG. To help overcome this technological inferiority, the Air Force sent the 4th Fighter Interceptor Wing (FIW), equipped with the new North American F-86 Sabrejet, to Korea in December 1950. From this unit, and later from the 51st FIW after it had re-equipped with F-86s, would come the fighter aces of the Korean War.

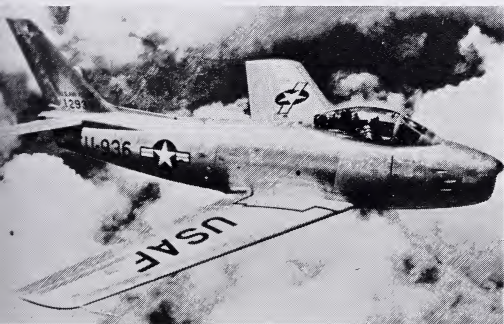
The F-86 was actually inferior to the MiG-15. The MiG had a much higher speed at altitudes above 30,000 feet, was much lighter, had a higher rate of climb, and a much smaller turn radius. The advantage that the Sabre enjoyed was the superior training and aggressiveness of its pilots. Despite the MiG's advantages, 792 of them were destroyed in air-to-air combat with F-86s. MiG pilots managed to destroy only 78 F-86s. This is testimony to the quality of pilots who flew the Sabrejets.

While the battle for air superiority was being waged over "MiG Alley," a much more important conflict was being fought at a table in the small North Korean town of Panmunjom. Peace negotiations began 10 July 1951, after the ground war had stagnated and both sides had temporarily given up on ground offensives.

In an attempt to speed up the negotiations by applying military pressure to the Chinese, the FEAF launched a rail



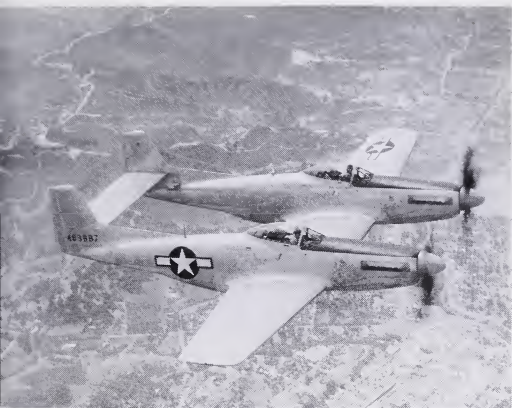
Lockheed P-80 Shooting Star



North American F-86 Sabre

interdiction campaign in August, 1951. General Stratemeyer believed that by interdicting the North Korean rail system, over which passed almost all of the supplies for the Chinese armies, FEAF could “strangle” the Chinese into signing a peace treaty. Twice a day, F-80s, F-84s, and B-29s would fly over North Korea to bomb rail bridges, railway beds, and rolling stock carrying supplies to the Chinese armies. This interdiction campaign, which became known as Operation Strangle, continued until March 1952. “Strangle” was an overly-optimistic title: air interdiction could not hope to completely shut-off supplies to the front lines because of the extraordinary lengths to which the Chinese and North Koreans went to keep supplies moving. “Strangle” evolved into “Saturate,” and in July 1952, FEAF introduced a third strategy of air interdiction—Operation Pressure. The brainchild of two staff officers, Lt Colonel B.I. Mayo and Colonel R.L. Randolph, Operation Pressure called for making “the war in Korea so costly to the Communist regime, that it would agree to a reasonable armistice at the Panmunjom truce tables.” Instead of attempting to stop the flow of supplies to the Chinese armies, Mayo and Randolph argued that destroying trucks, aircraft, radar sites, troops, locomotives, supplies, and remaining strategic targets would force the Chinese to sign a peace treaty.

“Pressure” operations began in earnest by striking military targets within the North Korean Capital, Pyongyang. Supply dumps, factories, troop billets, marshaling yards, and gun positions were the objects of these July 1952 attacks. In the following months, the Chinese, North Koreans, and Soviets witnessed FEAF F-84s and B-29s neutralizing much of the North Korean industrial



North American F-82 Twin Mustang

potential by bombing the hydro-electrical system. FEAF aircraft also ruined much of the North Korean rice crop by breaching the dams that fed the vital irrigation system. By the middle of 1953, the economic and military cost of the war became so great that on 27 July 1953 the Chinese signed the treaty that ended the Korean War.

The Air Force ended the war with 38 aces. Captain Joseph McConnell, Jr. was the Air Force's top ace with 16 kills, and Captain James Jabara was the second ranking ace with 15. Air Force pilots accounted for a total of 918 enemy airplanes while losing only 147 of their own.

STRATEGIC MISSILE DEVELOPMENT

by Captain Robert S. Fraser
(Class of 1973)

The tensions between the United States and the Soviet Union intensified in the wake of the Korean War. Many Americans believed that the Soviets had a master plan to dominate the world. This fear caused the American defense establishment to expand. The U.S. chose to develop weapons of such great power and global range that they would deter the Soviets from taking the first step. The Air Force assumed the lead in developing these weapons. This responsibility made it the cornerstone of the defense of the United States—a position the Air Force still holds today.

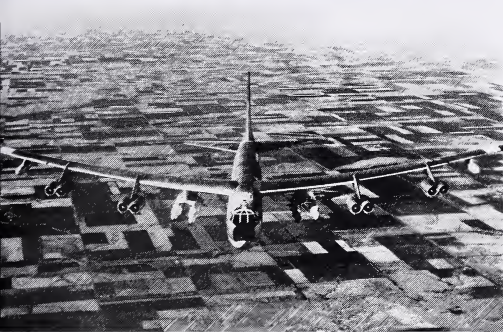
During the 1940's, the Air Force continued the development of the strategic bomber. The first all-jet, intercontinental bomber, the Boeing B-47 Stratojet, came into the inventory and replaced the B-36 and B-29 as SAC's main bomber. The B-47, in turn, was replaced by the Boeing B-52 Stratofortress in the late 1950's.

But the major strategic weapon system developed during the cold war was the intercontinental ballistic missile (ICBM). In the next 30 years, the Air Force missile achievements changed forever the nature of military technology, national strategy, and international relations, while opening the way for the peaceful exploration and routine use of space for civilian and military purposes.

The Air Force ballistic missile development program had begun in Army Air Corps missile studies and projects immediately after World War II. The prospect of mating two war-developed technologies, the atomic bomb and the German V-2 ballistic guided missile, if realized, could have



Boeing B-47 Stratojet



Boeing B-52 Stratofortress with Skybolt missiles



Convair B-58 Hustler

completely revolutionized weaponry and strategic warfare.

That prospect, however, remained unrealized until 1954. Technical problems with atomic weapons and ballistic missiles made their combination into an economical, effective weapon impractical and resulted in a lack of funds for continued ballistic missile research and development (R&D).

By 1953 the situation had changed drastically. The "thermonuclear breakthrough" of the early 1950's made lightweight, high-yield nuclear weapons feasible. In addition, Soviet progress in developing thermonuclear weapons and ICBM's prompted a reexamination of U.S. strategic missile programs. If the Soviet missile threat were real and the missiles deployed, the USSR could gain a sudden

and possibly decisive strategic superiority over the U.S.

In October 1953, the Strategic Missiles Evaluation ("Teapot") Committee, composed of distinguished U.S. scientists and chaired by Professor John von Neumann, was set up to look into the Air Force's strategic missile program. In February 1954 the committee submitted its report. It stressed the recent technological advances and advocated reorienting and accelerating Convair's Project Atlas, the only U.S. ICBM under development.

These recommendations were approved and supported by civilian and military leaders of the Air Force and Defense Department. Air Research and Development Command (ARDC) was given responsibility for acceleration of the Atlas and in July 1954 established a field office to manage the new program. That office, in Inglewood, California, was activated under the command of Brigadier General Bernard A. Schriever and was charged with reorienting and accelerating Atlas missile development. General Schriever, who later commanded Air Force Systems Command, is considered to be "the father of the Air Force missile and space programs."

Within a year, the Air Force not only had advanced the Atlas program, but also had begun developing an alternative, or backup ICBM—the Titan. A more advanced, two-stage missile to be built by the Martin Company, the Titan was a hedge against failure or delay in the Atlas program. By the end of 1955, ADRC was given the additional tasks of developing an intermediate range ballistic missile (IRBM), the Thor, and of achieving an initial operational capability (IOC) with the missile systems it was building.

To meet this objective, the conventional sequential

development pattern was replaced with concurrent development on a scale never before used in military development programs. Development, production, testing, and IOC actions were undertaken simultaneously within a single overall plan.

A pivotal year for the Air Force ballistic missile program was 1957. The urgency once attached to the program waned as the Eisenhower administration made large cuts in defense spending in an effort to balance the budget. These actions effectively slowed the drive toward operational ballistic missile systems. On 20 September 1957, the first successful Thor IRBM was launched from Cape Canaveral, Florida. Then on 17 December, the first successful Atlas launch and short-range flight were made.

But between the first successful Thor and Atlas launches, the Soviet Union used an ICBM to place the first man-made satellite, Sputnik, in earth orbit on 4 October 1957. Sputnik's impact on the Air Force missile program, as well as on its emerging space projects, was immediate and momentous. Both programs were given renewed impetus. Restrictions were lifted, funding was increased, and previous priorities were reinstated.

After 1957, Air Force missile and space programs progressed rapidly. The Thor and Atlas missile sites were operational by 1960; but a more advanced version with storable propellants, all inertial guidance, and in-silo launch capability—the Titan II—was already in the process of development.

More importantly, the Air Force had made significant progress in the development of the solid-propellant, three-stage Minuteman ICBM. Begun in 1958, the

Minuteman was to be economical, efficient, housed in hardened and dispersed silos, and capable of instantaneous response. The first flight test missile was launched on 1 February 1961, less than three years after the program approval was granted.

By 1960, it was increasingly apparent that the ballistic missile and space programs had grown into large and distinct entities that could no longer be effectively managed within the existing framework. On 1 April 1961, the Air Force Systems Command (AFSC) and the Air Force Logistics Command (AFLC) were created from the former Air Research and Development Command and Air Material Command. AFSC became heavily involved in missile siting throughout the United States and in deploying Atlas, Titan, and Minuteman missiles to SAC.

By the end of 1962, when the first Minuteman I's were turned over to SAC, all 132 Atlas and 54 Titan I launchers were operational. In December 1963 SAC took possession of the last of the 54 Titan II launch complexes. As the Minuteman force grew toward its programmed strength of 1000 hardened and dispersed missile launchers, the older, less economical Atlas and Titan I missiles were retired from the active inventory during 1964-1965.

Even while Minuteman I missiles were being installed in their underground silos, the Air Force was completing the improved Minuteman II missile that would be emplaced at Grand Forks AFB, North Dakota. To enhance the effectiveness of the Minuteman force even further, the Force Modernization Program was initiated in 1964 to replace all Minuteman I missiles with the Minuteman II. In May 1967, the Minuteman force reached its planned strength of 1000

launchers. On 16 August 1968, a new chapter in the Minuteman story opened when the first Minuteman III was launched from Cape Canaveral and completed its 5,000 mile test flight down the Eastern Test Range. This new version of the Minuteman was capable of carrying three Multiple Independently-targetable Reentry Vehicles (MIRV). Less than two years later the first ten Minuteman III missiles were deployed at Minot AFB, North Dakota. The Force Modernization Program ended in 1975, when the last of the Minuteman III missiles were emplaced at Malmstrom AFB, Montana. The updated SAC ICBM force now had 450 Minuteman II and 550 Minuteman III missiles. The other Minuteman bases include Whiteman AFB, Missouri; Ellsworth AFB, South Dakota; and Warren AFB, Wyoming. AFSC's responsibilities for production and deployment of Minuteman III gradually phased out, and the last missile left the assembly line on 30 November 1978. Engineering responsibility for maintenance of the Minuteman III system was transferred to the Air Force Logistics Command.

Together with SAC's manned bombers and the Navy's Polaris/Poseidon/Trident missile launching submarines, the land-based Minuteman II/III and Titan II missiles form the Triad of retaliatory strategic nuclear forces that are on continuous alert to deter any hostile nuclear attack on the United States or its allies. AFSC and its predecessors played a vital and continuing role in the development and constant improvement of the existing land-based missiles while examining the needs for future missile systems.

Under the terms of the 1972 Strategic Arms Agreement between the United States and the Soviet Union, this country could no longer deploy additional ICBM's and sea-launched

ballistic missiles (SLBM) to maintain a strategic balance with the Soviet Union. It became a question of quality rather than quantity. In late 1973 the Air Force began an advanced development program to define technology and design concepts for a large, survivable, highly accurate, MIRVed ICBM designated Missiles X or MX. Much effort was devoted to alternate basing options, including new silos and ground mobile systems. In August of 1974 an airmobile basing option was demonstrated when a Minuteman missile was successfully launched from a C-5. President Reagan recently reversed President Carter's decision to base the missiles in a ground mobile mode using horizontal protective shelters. At this writing the basing mode has not been finalized, but it will probably use a new type of hardened silo.

VIETNAM

The competition between the Soviet Union and the United States, while often intense in the Cold War period, recognized certain limits. The fear of nuclear war loomed large in both nations. The Soviets and Americans tacitly recognized the return of limited war, war fought for limited objectives rather than for the annihilation of the enemy. The Korean War had been fought on this model; so too would be the war in Vietnam.

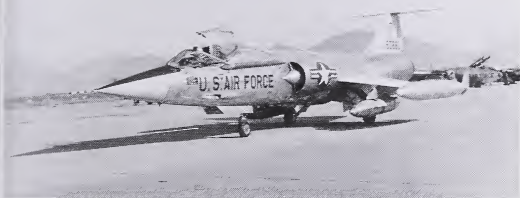
Late in 1961, President Kennedy sent military advisors to South Vietnam. This initial group included an Air Force Special Air Warfare Unit called "Farmgate." Flying T-28s, AC-47s, and A-26s, Farmgate instructors improved the skills of Republic of Vietnam (RVN) pilots. Between 1962 and

1964, A-1E aircraft arrived to supplement the initial Farmgate force. Also in 1962, the first USAF combat unit, the 509th Fighter Interceptor Squadron, arrived in South Vietnam.

American participation was limited to an advisory and defensive role until 1964. In retaliation for North Vietnam PT boat attacks on two U.S. Navy destroyers stationed in the Gulf of Tonkin, President Johnson ordered air strikes on North Vietnam in August 1964.

American involvement in the war mushroomed, with Air Force units of all types joining the fray. In the South, or "in-country," F-100s and later F-4s flew the bulk of the air support missions, aided in target location and identification by Forward Air Controllers (FACs) flying O-1 Bird Dogs, OV-10 Broncos, and the O-2. One FAC, Captain Hilliard Wilbanks, discovered a large enemy force closing in on an American position. Armed only with a rifle, Capt Wilbanks made repeated passes on the enemy, hoping to delay them. He succeeded in warning the American troops, but was killed in the process. For his heroism, Capt Wilbanks was awarded the Medal of Honor.

C-130, C-123, and C-7 "trash haulers" supported Army operations, braving intense enemy fire to resupply isolated or surrounded outposts like Khe Sanh and An Loc. The unarmed transports not only hauled in food, fuel and ammunition, but they evacuated the wounded. In 1968, Lt Colonel Joseph Jackson flew his C-123 into an airfield under heavy enemy assault to rescue a Combat Control Team. His fortitude was recognized by the award of the Medal of Honor.



Lockheed F-104 Starfighter in Vietnam



McDonnell Douglas RF-101 Voodoo

It was the air war against the North that captured the attention of American decision-makers. In February 1965, the United States launched Operation Rolling Thunder, an aerial campaign against North Vietnam that was to last until 1968. Rolling Thunder was calculated to end the war by striking selected targets and driving the North Vietnamese to the treaty table. Should they resist the initial assaults, aerial pressure would be increased in a system of "graduated response." By 1966, the focus of American attacks became the Red River Valley, stretching some 120 miles from Yen Bai in the Northwest to Haiphong on the Gulf of Tonkin. For the first five years of the USAF's involvement in the war in SEA, the Republic F-105 Thunderchief bore the brunt of the air war against the North, flying 75% of the missions. The F-4, F-111, and B-52 would later supplant the "Thud." A 1964 Academy graduate, Karl Richter, finished 100 dangerous F-105 missions over the North, and then signed up for an additional tour. On 28 July 1967, on his 198th mission, Lt Richter was shot down. Ejecting safely from his crippled aircraft, Richter disappeared into a rocky valley. In critical condition, he was rescued by a helicopter crew, but died enroute to a hospital. Richter, the youngest pilot to shoot down a MiG, received the Air Force Cross for his heroism and devotion to duty.

Despite the dedication and sacrifice of men like Richter, Rolling Thunder did not force the North Vietnamese to a peace conference. On the contrary, its piecemeal nature enabled them to build up their air defense. The pilots flying against the North faced the most sophisticated air defense network ever tested in combat. The Soviet-supplied and -organized system included some 2,300 surface-to-air missiles (SAMs), thousands of anti-aircraft artillery (AAA)



Fairchild C-123 landing at an Army Forward Base



Republic F-105F Thunderchief "Wild Weasel"

guns of all calibres, and approximately 180 MiG aircraft. The vast majority of this air defense force was concentrated in a sixty-mile-long by forty-mile-wide section of the Red River Valley, with the capital city of Hanoi as the hub. An extensive net of radar sites provided early warning of American attacks. The North Vietnamese coordinated the SAMs, AAA, and MiGs to provide optimum coverage of key targets.

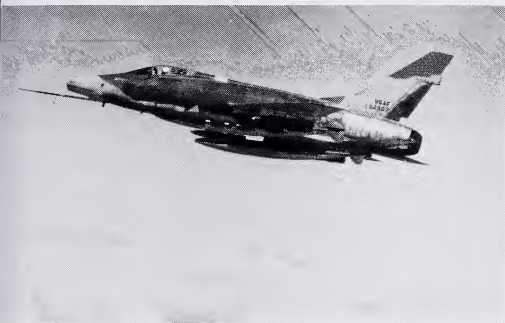
Two-seat F-105s known as "Wild Weasels," were assigned the responsibility for SAM suppression. These aircraft played a deadly game of cat and mouse with enemy radar sites, hoping to destroy the enemy before they could lock-on and eliminate the Weasel. Major Merlyn H. Dethlefsen was awarded the Medal of Honor for his gallantry in suppressing SAM sites even after his aircraft had been seriously damaged.

The Air Force and the Navy were also able to neutralize the MiG threat. Early in the war air-to-air battles pitted the older MiG-17s and MiG-19s against early models of the F-4. The first Air Force MiG kill of the war was by an F-4C on 10 July 1965. By 1967 the MiG-21 Fishbed appeared in quantity. The Air Force started flying MIGCAP escort missions. Colonel Robin Olds' 8th Tactical Fighter Wing, the "Wolfpack," helped subdue the Vietnamese MIGs. Colonel Olds, promoted to Brigadier General, later served as Commandant of Cadets at the Air Force Academy.

A 1964 graduate of the Academy, Captain Steve Ritchie, became the first Air Force ace of the Vietnam War on 28 August 1972, while flying with the 555th (Triple Nickel) Tactical Fighter Squadron. Twelve days later, his navigator, Captain Charles DeBellevue, became the second Air Force ace. DeBellevue, who was to become the leading American



Boeing B-52 Stratofortress during Linebacker II



North American F-100 Super Sabre

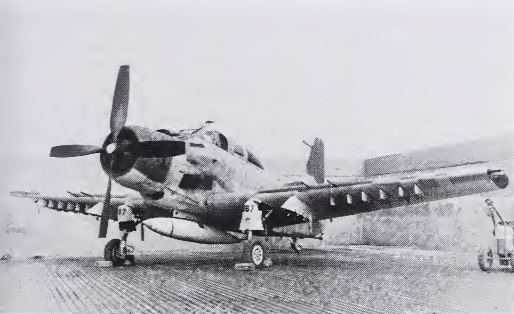
ace of the war with six kills, was also the first weapon system operator/navigator in history to become an ace. Captain Jeffrey Feinstein, also an Academy graduate, was the third and last Air Force ace of the war.

Despite the successes of SAM suppression and escort sorties, American aircraft were shot down. "Jolly Green Giant" and "Super Jolly" rescue helicopters and their A-1 "Sandy" escorts accomplished seemingly impossible rescue missions deep in hostile territory. Major Bernard Fisher landed his A-1 on a cratered runway surrounded by enemy gunners to save a fellow pilot. For this act, Major Fisher received the Medal of Honor. First Lieutenant James Fleming received the Medal of Honor for exposing his UH-1 helicopter to intense enemy fire while rescuing a stranded Special Forces Team.

Peace talks, including all parties in the dispute, opened in Paris in January of 1969. They continued without effect until March 1972, when North Vietnam launched a major offensive, spearheaded by Soviet tanks and backed by heavy artillery and SAMs, across the DMZ into the South. In April 1972, President Nixon authorized the resumption of the air effort against the North. This bombing campaign, Operation Linebacker I, was more intense and effective than the earlier Rolling Thunder operations. The main targets were North Vietnamese communications centers, road networks, railroads and rolling stock, bridges and military barracks. The effort was intended to cut off the movement of supplies to the North Vietnamese Army in the South and to destroy or severely limit North Vietnam's ability to conduct the war. At President Nixon's direction, the harbors of Haiphong and several lesser ports were mined in May 1972 to eliminate shipping as a source of supply for the North Vietnamese. As a



Republic F-105D Thunderchief



Douglas A-1E Skyraider

result of that decision the North Vietnamese government was forced to rely on rail and road connections with the People's Republic of China. The two rail networks leading into Hanoi from China carried the heaviest traffic and became the focus of U.S. fighter-bombers.

As in the 1965-68 operation against North Vietnam, the brunt of the offensive would be borne by fighters and fighter-bombers. The heavy B-52 bombers, used "in-country" since 1965, continued tactical bombing operations in South Vietnam and against the Ho Chi Minh Trail. The B-52, as the main nuclear weapons delivery system of the United States, was at first considered too valuable to risk against the air defense network of the North. The "BUF" began to strike targets in the North in late December 1972 as part of Operation Linebacker II. The "Christmas Offensive," the first true strategic bombing campaign directed against the North, quickly brought the North Vietnamese back to reality. By January 1973, a cease-fire agreement was reached and prisoner-of-war (POW) exchanges began in February.

Of all the cases of bravery demonstrated by our men in the military during the Vietnam War, few accounts can surpass the undaunted courage and sense of honor exhibited by the POWs. These men, from the infantry soldiers to downed pilots, endured terrible physical and mental torture—inhuman treatment specifically outlawed by the Geneva Convention.

In November 1970, an elite helicopter-borne force of American raiders commanded by Colonel Arthur D. "Bull" Simons attempted to rescue a number of American POWs. The force attacked the Son Tay POW Camp located 23 miles from Hanoi. Upon arriving at Son Tay they found'

Even though the raid failed, it demonstrated America's resolve to get the POWs back. The raid also forced the North Vietnamese to consolidate the prisoners into larger camps. In these larger compounds, the POWs were able to resist Communist exploitation more effectively.

Many men demonstrated outstanding courage while in captivity. Captain Lance P. Sijan, a 1965 graduate of the Academy, was posthumously awarded the Medal of Honor for his valiant struggle to survive. Captain Sijan became the first Academy graduate to receive the highest military decoration of our country.

Although the United States did not accomplish its political objectives in the war in Vietnam, the Air Force once again proved it was equal to the task, contributing significantly to the war effort under new and sometimes radically different conditions. In reaction to the war in Vietnam, the USAF developed new weapon systems, methods of ordnance delivery, and training programs. Coordination between FACs and tactical fighters was perfected, and new means of aerial resupply developed. The AC-130 Spectre, mounting a 105m Howitzer, pushed the gunship concept to its ultimate development. The F-111 was tested under all types of weather conditions, and the B-52 was used in the conventional rather than nuclear rule. Electronic Counter Measures (ECM) evolved at a dizzying pace to counter the air defense systems that ringed North Vietnamese target areas.



Northrop F-5 E Tiger II Aggressors

A particularly important lesson of the war was the need for dissimilar air-to-air combat training to expose aircrews to enemy tactics and provide simulated combat experience to them. This training, known as Red Flag, is conducted at Nellis AFB and simulates an actual combat environment by pitting F-5E Aggressor aircraft, hostile ground defenses, and ECM against friendly forces.

SPACE: THE NEWEST USAF FRONTIER
by Captain George C. Nield IV
(Class of 1972)

In the last twenty-five years, our country has become increasingly dependent on space systems as an integral part of our military forces. Today, Air Force satellites routinely provide such functions as reconnaissance, communications, weather, and navigation. The primary role of military space systems has become one of force enhancement: acting as a force multiplier to help our land, sea, and air forces defeat an enemy with superior numbers.

Reconnaissance satellites are now used both for treaty verification and to provide early warning information for possible future conflicts. Their very existence was classified until 1978, and even today little is releasable about such programs. The use of satellites for communications was first demonstrated in 1958. Today, communications satellites provide a secure, worldwide network for both voice and data transmissions. Other Air Force satellites provide weather data for the entire Department of Defense. Information can be used for both long-range forecasting and up-to-the-minute operational plans. Data are also sent to the National Oceanic and Atmospheric Administration for tropical storm detection and tracking. Satellites also offer a tremendous potential for improving our navigational capabilities. When the Global Positioning System is fully operational, aircraft, ships, ground vehicles, and infantrymen will all be able to obtain extremely accurate three-dimensional measurements for position and velocity using small, lightweight receiving units.

Unmanned spacecraft have been and will continue to be a



North American X-15

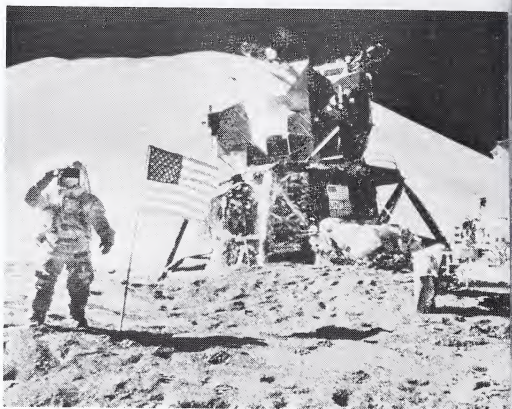
vital part of our overall space program. Yet it has been our manned spaceflights which have provided the driving force behind many of our space achievements, helping to foster public support, and laying the foundation for future space operations. On April 12, 1961 Soviet Air Force Maj Yuri Gagarin became the first man to venture into space. His one-orbit flight demonstrated to the world that the space race was for real. America's first manned mission was a sub-orbital flight by Navy Lt Cmdr Alan Sheppard on May 5, 1961. A Redstone rocket carried his tiny Mercury capsule 302 miles downrange during the 15-minute flight. It was not until February 20, 1962 that an American astronaut went into orbit. On that date Marine Corps Lt Col John Glenn made a three-orbit trip, with his capsule, Friendship 7, carried aloft by an Atlas booster.



USAF Major Ed White space walks from Gemini 4

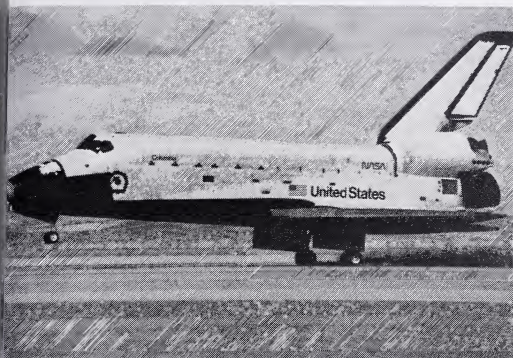
After Project Mercury had demonstrated that man could indeed survive in space, Project Gemini proved that he could work there too. Titan missiles were used to launch these two-man flights, which emphasized the development of techniques for rendezvous and docking. During this program Air Force Maj Ed White became the first American to “walk” in space, leaving his spacecraft to test a hand-held maneuvering unit.

Projects Mercury and Gemini were both just stepping stones to the Apollo Program—the effort to land men on the moon. Apollo 11, like the other moon flights, began with the



USAF Colonel Edwin “Buzz” Aldrin with Apollo 11

launch of a huge Saturn V booster. After a three-day coast through space, Air Force Col Michael Collins watched from lunar orbit as the Lunar Module Eagle began its descent. On July 20, 1969, Neil Armstrong stepped slowly down the ladder to become the first man to walk on the moon. Those listening back on Earth would hear him say, “That’s one small step for a man; one giant leap for mankind.” A short time later he was joined on the surface by Air Force Col Edwin Aldrin. After planting the American flag and collecting rock and soil samples, the astronauts linked up with the Command Module Columbia and rocketed back to



Rockwell International OV-102 Columbia

Earth for a splashdown in the Pacific Ocean.

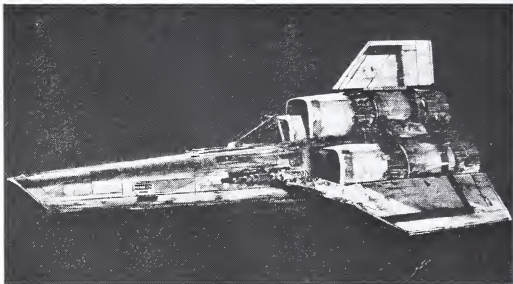
After six successful lunar landings, the Apollo Program came to a close. Our next manned program was Skylab—the first true space station. Skylab was occupied by three separate crews, with missions of 28, 59, and 84 days providing valuable information on the effects of long-duration spaceflight on the human body.

In 1975 the United States and the Soviet Union participated in a joint space mission, the Apollo-Soyuz Test Project. The use of specially designed docking mechanisms allowed the two countries' spacecraft to link up in orbit as a demonstration of the capability for future space rescues. Although there were few technical achievements on this

flight, it did give the United States an opportunity for an in-depth view of the normally secretive Soviet space effort.

After a six-year absence, America's astronauts once again took to the sky on April 12, 1981 with the first flight of the Space Shuttle Columbia. Piloted by John Young and Navy Capt Robert Crippen, the Shuttle began its three-day test flight from the Kennedy Space Center in Florida. After a near perfect flight, the Columbia made a smooth touchdown on the dry lakebeds of Edwards AFB, California.

At least three more Shuttles are planned: Challenger, Discovery, and Atlantis. Each will be capable of making at least 100 flights, which should help to bring down the high cost of putting payloads into space. About one-third of currently planned Shuttle Flights are reserved for Defense Department missions, and all new Air Force satellites will be designed to be launched by the Shuttle. Nevertheless, if the development of the airplane can serve as a guide, it may take many years before the most important military uses for the Shuttle can be recognized.



USAF TODAY . . . AND TOMORROW

And so today as the USAF moves toward the 21st Century, many changes lie on the horizon. New weapons and changing threats force the USAF to constantly evaluate their interests, redevelop their strategies and tactics, and push for new levels of airpower technology.

With the ever-present Soviet threat to the east, the USAF continues to supplement the backbone of the NATO force with F-15, F-16, F-111, and A-10 units. Under a tense atmosphere of constant training, USAF aircrews stand ready to combat enemy forces attempting to penetrate into Western Europe.

A second area of possible conflict lies to the west—unfinished business in Korea gives rise to a possible push by North Korea to the south as they did in 1950. Again, the Air Force supports the ROK with F-4 and F-15 squadrons along with deployed units to stand vigil against the Communist threat to the north.

But even with these strong threats, from Korea and the USSR, recent events have revealed an even greater potential crisis arena—the Middle East. The USAF has taken an extreme interest in this area, especially after the fatal attempt to rescue the 52 American hostages in Tehran and its realization of inadequate deployment methods. Out of this, the NSC and JCS developed the Rapid Deployment Joint Task Force (RDJTF), an organization containing mobile elements of all services under one command.

And yet with these problem situations, along with budget limitations and political constraints, the USAF still advances on toward the future. Such recent developments as the B-1



Boeing NKC-135 Airborne Laser Laboratory

bomber; MX missile system; improved C³I systems; air launched cruise missiles; forward swept wing aircraft design; more realistic training environments; as well as research for an antisatellite missile (ASAT); the airborne laser laboratory to test feasibility and combatability of lasers to aircraft weapons systems; and the Space Shuttle, which will extend the Air Force arm into our newest frontier, assuring the USAF of a flexible and versatile fighting force well into the year 2000.

But as the USAF looks over an unstable and tense world, it may also look back on its 75 plus years of history. From its miniscule beginnings in 1907 with the U.S. Army aeronautical division (one biplane and 3 pilots), airpower grew into an awesome armada of more than 64,000 aircraft and over 2 million men and women by the end of World War II. And still today, in an age of atomic weapons, mach flight, and capabilities to land a man on the moon, the USAF

remains the most awesome and devastating airpower force on the face of the globe.



General Dynamics F-16XL Scamp

And so the future history of the USAF may read something much like what is written here, altered only by the wonders of new weapons and new aircraft to carry them. But the common denominator will always remain—the mission of the United States Air Force is:

TO FLY, TO FIGHT, AND TO WIN!

AIR FORCE ACADEMY





Lieutenant General Winfield W. Scott, Jr.

SUPERINTENDENT

Lieutenant General Winfield W. Scott, Jr. was born Dec. 10, 1927, in Honolulu. He graduated from high school in Lewisburg, WV., in 1945 and entered the U.S. Military Academy, West Point, N.Y., in 1946. Upon graduation from the Academy in 1950, he received a Bachelor of Science Degree in Military Science and a commission as a second lieutenant. General Scott earned a Master of Arts Degree in International Law and Relations from the Catholic University of America, Washington, D.C., in 1963. He completed the Armed Forces Staff College, Norfolk, VA, in 1964 and the Naval War College, Newport, RI, in 1967.

He received his wings upon completion of pilot training in August 1951 at Craig Air Force Base, AL. After advanced fighter pilot training at Luke Air Force Base, AZ, he was assigned as a tactical reconnaissance pilot at Kimpo Air Base, South Korea, where he completed a combat tour of duty in F-51s.

From 1952 to 1959, General Scott served in many operational and maintenance positions flying F-80s, F-84F's, F-86F's and F-100s. In 1958 he won individual honors as high man in the Pacific Air Forces fighter weapons meet flying the F-100 Super Sabre.

The general was assigned as an Air Force Reserve Officers' Training Corps instructor from May 1959 to July 1962, and then as professor of aerospace studies at the Catholic University of America until August 1963. He completed the Armed Forces Staff College in February 1964 and then transferred to Royal Air Force Station Lakenheath, England, as commander of the 492nd Tactical Fighter Squadron. He entered the Naval War College in August 1966 and after graduation completed transition training in F-4D Phantoms with the 476th Tactical Fighter Squadron at George Air Force Base.

He was assigned to the Republic of Vietnam in January 1968 as assistant director of operations, 366th Tactical Fighter Wing, Da Nang Air Base where he flew 108 combat missions in F-4s. In August 1968 he became chief of the Current Operations Division, Tactical Air Control Center, Headquarters 7th Air Force, Tan Son Nhut Air Base.

From 1969 to 1977, General Scott held various command and staff positions: action officer on the Air Staff, wing commander, major air command assistant deputy chief of staff for operations, division commander, vice commander of an air logistics center, and commander of a technical training center.

General Scott served as assistant deputy chief of staff, plans and operations, Headquarters U.S. Air Force, Washington, D.C., from August 1977 until June 1978. He then took command of the Alaskan Air Command, with additional duty as commander of the Alaskan North American Air Defense Region, Elmendorf Air Force Base, Alaska. In April 1981, he assumed command as deputy commander, U.S. Forces Korea; deputy commander in chief, United Nations Command Korea; and chief of staff, Combined Forces Command, Seoul, South Korea.



Brigadier General Anthony J. Burshnick

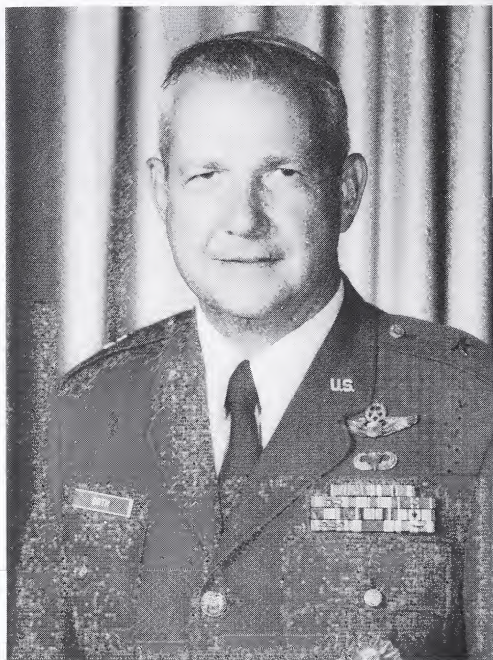
COMMANDANT OF CADETS

General Burshnick is a graduate of the Air Force Academy, Class of 1960, where he served as Cadet Wing Commander and was a varsity basketball player. He has served throughout the United States, Southeast Asia and Japan. His commands have included the 475th Air Base Wing, Yokota AB, Japan, and the 60th Military Airlift Wing, Travis AFB, California. During a previous assignment to the Academy, he was an Air Officer Commanding, and Chief of the Scheduling Division. He also served as an Air Force liaison officer to the U.S. House of Representatives.

General Burshnick was born in Forest City, Pennsylvania., 12 January 1937 and graduated from Forest City High School in 1954. He enlisted in the United States Air Force and served as an electronics instructor until entering the Academy in 1956.

General Burshnick received a Master of Science Degree in Public Administration from Auburn University in 1976. In 1980, he completed the Executive Development Program at Cornell University. He is a graduate of Squadron Officer School, the Armed Forces Staff College, and a distinguished graduate of the Air War College.

A command pilot with more than 5,000 flying hours, General Burshnick has flown the T-29, T-39, C-47, C-118, C-131, C-123, C-135, C-141, and the C-5 aircraft. He flew over 800 combat hours in the C-123 in Vietnam. His military decorations and awards include the Legion of Merit, Distinished Flying Cross, Meritorious Service Medal with three oak leaf clusters, Air Medal with 16 oak leaf clusters, and Air Force Commendation Medal with one oak leaf cluster.



Brigadier General William W. Orth

DEAN OF THE FACULTY

Brigadier General William A. Orth graduated from West Point in 1954, and was commissioned in the Air Force. After completing flying training at Laredo AFB, he served as a fighter-interceptor pilot in the United States, England and Germany.

Following a brief assignment in intelligence at Headquarters USAFE, he attended Purdue University in 1961 and received his Master's Degree in Mechanical Engineering. His first assignment to the Air Force Academy, in the Department of Mechanics, lasted two years. In 1963 he was assigned to ATC as an instructor pilot, assistant operations officer, and Chief of Safety at Vance AFB.

General Orth's next assignment was to Brown University in 1965 where he received his Doctorate in Applied Mathematics. An assignment to the Academy in the Department of Mathematics started in 1968. Two years later he left for a tour in Vietnam where he flew A-37 aircraft. During this tour he served as Chief of Safety, 3rd TFW, and Commander, 8th Special Operations Squadron.

His assignment, following Vietnam was to Headquarters SAC in accounting and finance, DCS/Comptroller. There he became the Director of Engineering and Construction, DCS/Civil Engineering, and in 1973 moved to the position of Assistant DCS/Civil Engineering. He was serving in that position when he was appointed permanent professor and head, Department of Physics, USAFA, in 1974.

General Orth became the Academy's fourth Dean of Faculty on 1 September 1978. His decorations include the Legion of Merit, Distinguished Flying Cross, Air Medal with 10 oak leaf clusters, and the Air Force Commendation Medal.



Colonel John J. Clune

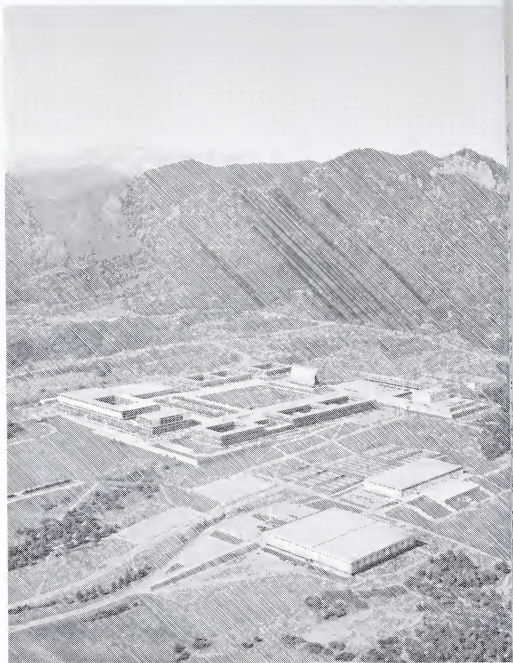
DIRECTOR OF ATHLETICS

Colonel John J. Clune graduated from the United States Naval Academy in 1954 with a Bachelor's Degree in Engineering. While there, he was selected an All-American in basketball; his career and single season scoring marks are still Annapolis' records.

His initial assignments were in missile operations, missile maintenance, and administration. He earned a Master's Degree in Electrical Engineering from the University of Southern California in 1964, and was assigned to AFSC. He served as an Air Officer Commanding at the United States Air Force Academy from 1965 to 1968. He completed Armed Forces Staff College in 1969 and Industrial College of the Armed Forces in 1972. Prior to returning to the Academy, he was Chief of the Electronics and Equipment Division, AFLC and Chief of Logistics Engineering Branch, Headquarters USAF.

Colonel Clune is very active in collegiate national affairs, serving on the NCAA's Postseason Football Committee and as the third vice-president of the National Association of Collegiate Directors of Athletics.

Colonel Clune has a senior missileman rating. His decorations include the Meritorious Service Medal with one oak leaf cluster and the Air Force Commendation Medal.



United States Air Force Academy

HISTORY OF THE AIR FORCE ACADEMY

Following organization of the United States Air Force as a separate service in 1947, work commenced toward the realization of yet another dream—its own academy.

In 1948, Secretary of Defense James Forrestal appointed a Service Academy Board to review the capabilities and facilities of the Military and Naval Academies and make recommendations for the establishment of an academy for the Air Force. On 1 April 1954, 4 years after the Board's report was received, Congress authorized the construction of an Air Force Academy. The Air Force had been preparing for this action. Forty officers and civilian educators headed by Colonel Eiler at the Air University, Maxwell Air Force Base, Alabama, had developed the curriculum for the Academy several years in advance. Secretary of the Air Force Harold Talbott personally selected the location for the Academy on the basis of the Colorado site's notable advantages of a quiet, isolated location still accessible to large towns, favorable weather for training, and the fact that the State of Colorado offered one million dollars for the purchase of the land.

Over 340 architectural firms competed for the commission of designing and constructing the Academy. Skidmore, Owings and Merrill, Architects and Engineers, finally won. Their original plans were deemed "too modernistic" by Congress. The "accordion-like" chapel was the central object of controversy. Not only Congress, but also such well-known American architects as Frank Lloyd Wright considered the design to be in poor taste. Before 126 million dollars were allocated for construction, the design had to be modified to more traditional lines of architecture, a change

which increased the final building cost by four times. The approved layout of the newest Academy was finally unveiled on 14 May 1955.

On 11 July 1955, the same year that construction began, the first class of 306 men was sworn in at a temporary site at Lowry Air Force Base, Denver. Lt General Hubert R. Harmon, a key figure in the development of the Academy since 1949, was recalled from retirement to become the first Superintendent. Two years later Maj General James E. Briggs took over as the Academy's second superintendent. During his tour, on 29 August 1948, the Wing of 1145 cadets moved to its present site from Denver. Less than a year later the Academy received accreditation. Maj General William S. Stone became the third superintendent in 1959; Maj General Robert H. Warren, the fourth; Lt General Thomas S. Moorman, the fifth; Lt General Albert P. Clark, the sixth; Lt General James R. Allen, the seventh; Lt General Kenneth L. Tallman, the eighth, and presently Maj General Robert E. Kelley is the ninth.

The 18,000 acres which comprise the Air Force Academy are located on the east slope of the Rampart Range; 7,258 feet above sea level. The base is divided into three major areas: the cadet area, the base community area, and the service and supply area.

The cadet's life is centered around the nine major buildings in the cadet area. These buildings have been named after Air Force officers who were particularly vital to the history of the Air Force and the Academy.

Vandenberg Hall, a cadet dormitory, contains 1,320 cadet rooms, the Cadet Store, barber shop, supply and counseling offices, as well as various rooms for professional activities and recreational clubs. The dormitory was named after

General Hoyt S. Vandenberg, the second United States Air Force Chief of Staff, who served from 1948 until 1953. His efforts strengthened the position of the Air Force and aided in the development of today's forces.

Fairchild Hall contains both academic classrooms and administrative facilities, including the Air Force's Frank J. Seiler Research Laboratory. The library on the north end of Fairchild Hall now has well over 477,203 volumes. The academic building was named after the first commander of the Air University, General Muir S. Fairchild, who later became Vice Chief of Staff, in recognition of the fine work done by the Air University and General Fairchild on improving educational opportunities in the Air Force.

Mitchell Hall, the cadet dining hall, has facilities for serving meals to 4,400 cadets simultaneously. Mitchell Hall was named in honor of Brig. General "Billy" Mitchell. He was the most outspoken and farsighted American advocate of air power during World War I and the period following. He sacrificed his career for the advancement of air power.

The Cadet Chapel, dedicated in September 1963 is the architectural high point of the Academy. It can seat 1,200 for Protestant services, 600 for Catholic services, and 100 for Jewish services.

Arnold Hall, the cadet social center, has a large ballroom, a 3,000 seat theater, snack bars, recreation areas, and a bowling alley, as well as an office for the Wing Hostess. The lounge is separated into the upperclass lounge known as the Richter Lounge, and the doolie lounge or Smack Bar (as it is known to cadets). Arnold Hall also includes a pizza parlour and an ice cream parlour as well as a Disco. In the recreation areas are billiards, pool, ping pong, and television. The theater provides a good selection of movies and Allied Art

performances including plays, concerts, and top recording stars. The ballroom is the scene of formal receptions and dances. Arnold Hall was named after the first General of the Air Force, Henry H. "Hap" Arnold, who was chief of the Army Air Force during World War II and fought vigorously for a separate Air Force.

Harmon Hall, the administrative center of the Academy, houses the offices of the superintendent and his staff. It was named in tribute to Lt General Hubert R. Harmon, who worked from 1949 until 1954 on plans for an Air Force Academy and who was instrumental in getting Congressional approval for the Academy.

Cadets at the Air Force Academy have available to them some of the finest facilities in the nation for physical activity. The Cadet Gymnasium, surrounded by athletic field, contains several gyms, two swimming pools, squash and handball courts, and facilities for playing nearly every sport. Falcon Stadium, the site of all home football games, is located on the east side of the Academy, away from the cadet area. The cadet Fieldhouse is the center of many Academy sports and activities. The Fieldhouse is divided into three areas: the largest is the indoor track area which is covered with astro-turf and is used by the football and baseball teams for indoor practice; the second section has a hockey rink with seating for 2,600 spectators, and is used on weekends for recreational skating by cadets and Academy personnel; and the last area has a basketball court with seats for 6,000 and also houses intercollegiate wrestling matches.

Expansion of the Cadet Wing to an authorized strength of 4,417 brought with it many improvements and additions. A second dormitory was built on the south perimeter of the Cadet Area, increasing from 1,320 to 2,233 the number of

cadet rooms. The Tailor Shop and the Dental Clinic were moved into the new dormitory, leaving room for the existing Cadet Store and Dispensary to expand. On 31 May 1976, the new dormitory was dedicated and named in honor of Lance P. Sijan, Class of 1965. Captain Sijan was the first USAFA graduate to receive the Medal of Honor, awarded to him posthumously for heroism as a POW in North Vietnam.

Other changes to the Cadet Area included expansion of the Pine Valley Airfield in the southeast corner of the base, increasing room for the Academy's Aero Club, parachuting, soaring and T-41 flight training programs. Arnold Hall also received attention in the form of the new Richter Lounge, dedicated to USAFA Class of 1964 graduate Karl Richter, who was killed while on his 198th mission over North Vietnam in an F-105.



SUPERINTENDENTS

Lieutenant General Hubert R. Harmon, 1954-1956
Major General James E. Briggs, 1956-1959
Major General William S. Stone, 1959-1962
Major General Robert H. Warren, 1962-1965
Lieutenant General Thomas S. Moorman, 1965-1970
Lieutenant General Albert P. Clark, 1970-1974
Lieutenant General James R. Allen, 1974-1977
Lieutenant General Kenneth L. Tallman, 1977-1981
Major General Robert E. Kelley, 1981-

COMMANDANTS OF CADETS

Brigadier General Robert M. Stillman, 1955-1958
Major General Henry R. Sullivan, 1958-1961
Brigadier General William William T. Seawell, 1961-1963
Brigadier General Robert W. Strong, Jr., 1963-1965
Brigadier General Louis T. Seith, 1965-1967
Brigadier General Robin Olds, 1967-1970
Major General Walter T. Galligan, 1970-1973
Brigadier General Hoyt S. Vandenberg, Jr., 1973-1975
Brigadier General Stanley C. Beck, 1975-1978
Brigadier General Thomas C. Richards, 1978-1981
Brigadier General Robert D. Beckel, 1981-1982
Brigadier General Anthony J. Burshnick, 1982-

DEANS OF FACULTY

Brigadier General Don Z. Zimmerman, 1954-1955
Brigadier General Robert F. McDermott, 1956-1968
Brigadier General William T. Woodyard, 1968-1978
Brigadier General William A. Orth, 1978-



OUTSTANDING GRADUATES

Although the Air Force Academy is relatively young in comparison to other service academies, our graduates are establishing a strong tradition of dedication and excellence that has brought many of them national recognition. The young men and women who pass through the Academy come from many walks of life, different ethnic backgrounds, and a variety of religions. The Academy serves as a rallying point for these different aspects of American culture; and from this will come the leaders of tomorrow for the Air Force and the nation. The qualities that cadets develop in the diverse programs of the Academy will help them in their future profession. This is exemplified by the records of our outstanding graduates.

No single list or short essay can adequately describe the deeds of all graduates. However, the few outstanding officers cited herein should serve as standards of a level of achievement that all cadets can strive to attain. These standards must be cultivated and nurtured and may be reached only if the cadets develop those traits of character and leadership necessary to be a good officer, a responsible civic leader, and a contributing community member.

Possibly one of the most outstanding all-around graduates is Colonel Brock T. Strom, Class of 1959. Cadet Strom combined academic and athletic excellence to become a true scholar-athlete. He was a consensus football All-American and received the Outstanding Cadet in Mathematics award. After graduation, he earned his Master's degree from MIT and a few years later his Doctorate from Arizona State University in Engineering Mechanics. He is presently assigned to Los Angeles Air Force Station. Brock Strom, Jr., graduated with the Class of 1982.

Another noteworthy member of the Class of 1959 is Colonel Bradley C. Hosmer. After graduating as the number one cadet in the General Order of Merit, he went to Oxford on a Rhodes Scholarship in Philosophy and Political Science. When finished with his Rhodes education, Colonel Hosmer became air liaison officer with the First Cavalry Division in Vietnam. He was one of the first four graduates promoted to Colonel and has received the Distinguished Flying Cross and two Bronze Stars. Colonel Hosmer is Commander of the 347th TFW.

Colonel Karol J. Bobko, a distinguished graduate, was the first former cadet to enter the space program. As a cadet, Colonel Bobko had a fine record and was on the Superintendent's List during his junior and senior years. He received a Master's degree in Aeronautics from the University of California. After completing training at the Air Force's Aerospace Research Pilot School at Edwards AFB, he was assigned to the Manned Orbiting Laboratory Program in August 1969. He is currently assigned to the Space Shuttle project. Colonel Bobko is one of many graduates selected as an "Outstanding Young Man in America."

Brigadier General Harold W. Todd, Class of 1959, distinguished himself by being the first Academy Graduate to be promoted to general. While at the Academy he was a Flight Commander and member of Group Staff. He was also named the Outstanding Cadet in Foreign Languages. After completing pilot training, he flew both B-47 and B-52 aircraft, completing 156 combat missions in Southeast Asia. While assigned to Headquarters, U.S. Air Forces in Europe (USAFE), he authored the NATO study which led to the creation of Allied Air Forces, Central Europe. He is presently the Commander of the 25th Air Division at McChord AFB, WA.

Major General Robert D. Beckel, Class of 1959, has continued to distinguish himself on active duty as he did while a cadet. He is the only person to have served as Cadet Wing Commander twice. He was also named the Most Valuable Basketball Player in 1959, after setting several Academy records which were not broken until the 1980-1981 season. After pilot training he flew F-100 and F-105 aircraft, completing 280 combat missions in Southeast Asia. He also served a tour with the Air Force Thunderbirds aerial demonstration team. He was assigned as Vice Wing Commander, 9th Strategic Reconnaissance Wing, Beale AFB CA, and later commanded the 410th Bomb Wing at K.I. Sawyer AFB MI and the 7th Air Division, Ramstein AFB, Germany. General Beckel served as the Commandant of Cadets from 1981-1982 and is presently Director of Operations at the Pentagon.

Brigadier General Robert C. Oaks, Class of 1959 flew three tours of duty in Southeast Asia, completing 190 combat missions in the F-100. Subsequently, he returned to the Air Force Academy where he was Air Officer Commanding for the 18th Cadet Squadron. When he returned to flying, he commanded the 391st Tactical Fighter Squadron which was equipped with F-111F aircraft. Upon his promotion to Colonel, he was transferred to the Pentagon where he served as Chief, Joint Policy Branch, Headquarters USAF. He is currently stationed at Ramstein Air Force Base, Germany.

The first Academy graduate to return as Permanent Professor is Colonel Ervin J. Rokke. Colonel Rokke is a member of the Class of 1962 and received his PhD from Harvard University. He served tours as an instructor at the Academy, a photo intelligence officer, a staff officer at Headquarters Pacific Air Force, and as a member of the U.S.

mission to NATO in Brussels, Belgium, and as a Professor and Head of the Department of Political Science at the Air Force Academy. Colonel Rokke is currently Air Attache at the American Embassy in London.

One-hundred and forty-one graduates gave their lives in Vietnam. Following are the stories of several graduates who made the ultimate sacrifice during that struggle.

First Lieutenant Karl Richter, Class of 1964, became the youngest Air Force pilot to down a MIG in combat. He received the Air Force Cross, and a Purple Heart in addition to Vietnamese Government decorations and 22 Air Medals. After volunteering for 200 missions, Lieutenant Richter was downed while on his 198th mission in the F-105D.

Another graduate who lost his life while performing meritoriously was Captain Harlow K. Halbower, Class of 1959. His long list of decorations includes the Silver Star, the Distinguished Flying Cross, the Purple Heart, the Air Medal with 11 clusters and the Gallantry Cross with Palm. Captain Halbower died while serving as a Forward Air Controller (FAC) when his O-1F was hit by ground fire on a mission 15 miles west of Saigon.

One of the most striking examples of courage and love of freedom can be seen in Lance Peter Sijan, Class of 1965. On November 9, 1967, Captain Sijan was flying in the back seat of an F-4 on a bombing pass over North Vietnam, when his aircraft was hit and exploded. Captain Sijan suffered a skull fracture, a mangled right hand, and a compound fracture of his left leg. The North Vietnamese found Sijan 45 days later and took him prisoner. Sijan managed one escape but was captured again within a couple of hours. During his three months of captivity he endured torture by his interrogators and constant beating by guards for his relentless efforts to escape from his bamboo cell.



In January of 1968, Lance Sijan finally succumbed to his injuries as a prisoner of war in Hanoi. He never gave up his quest for freedom, the freedom he fought for and ultimately died for. On March 4, 1976, President Gerald R. Ford awarded the Medal of Honor to Captain Sijan for his "Extraordinary heroism and intrepidity above and beyond the call of duty at the cost of his life. . . ." Three other former prisoners of war, all living, also received Medals of Honor from President Ford on the same day. One of them was Air Force Colonel George E. Day. Colonel Day wrote to the *Airman Magazine*:

Lance was the epitome of dedication, right to death! When people ask about what kind of kids we should start with, the answer is straight, honest kids like him. They will not all stay that way, but by God, that's the minimum to start with.

There were many other Academy graduates whose courage, skill, and leadership made them heroes as well as examples for all of us. The first graduate to down a MIG was a 1959 graduate by the name of Captain (now Colonel) Robert E. Blake. He was joined by two former cadets who were pilots in General Robin Olds' 8th Tactical Fighter Wing, the famous "Wolfpack." These two men, Captain (now Colonel) Norman E. Wells, Class of 1963, and First Lieutenant (now Colonel) Steven B. Croker, Class of 1964, each downed two MIGs. Major Richard S. Ritchie, class of 1964 was the first Air Force ace of the Vietnam War. A distinguished fighter pilot, he earned the Air Force Cross, the Silver Star with three clusters, and the Distinguished Flying Cross. In 1972 he won the McKay Trophy for the most meritorious flight of the year and the Jabara Award for Airmanship. The Jabara Award is given each year to the Academy graduate whose accomplishments demonstrate superior performance in fields directly associated with aerospace vehicles.

Other Jabara Award winners who deserve mention because of their heroic actions during the Vietnam conflict are Captain (now Colonel) Donald D. Stevens, Captain (now Lieutenant Colonel) Dale E. Stovall, and 1Lts (now Captains) Donald R. Backlund and Ronald T. Rand. Captain Stevens, Class of 1960, distinguished himself by extraordinary heroism while directing in an unarmed O-2A, the successful rescue of a wounded soldier. While making diving passes directly into heavy enemy fire, Captain Stevens fired four marking rockets between the soldier and the advancing enemy. He then gave careful and precise instructions to attacking fighter aircraft on the location of the soldier and the advancing enemy. His highly courageous acts

resulted in the successful helicopter rescue of the wounded soldier without any friendly casualties.

Captain Stovall, Class of 1967, led a formation of two Jolly Green HH-53 rescue helicopters deep into North Vietnam to pick up a downed airman, Captain Roger C. Locher. Captain Stovall braved heavy ground fire and MIG interceptors in an unsuccessful attempt to locate Locher. Despite being advised against returning for a second rescue attempt, Captain Stovall insisted on making another effort at finding Locher. On the second mission, Stovall spotted Locher's signal mirror and while receiving heavy ground fire he rescued Locher. During the course of this heroic mission, Captain Stovall and his crew braved MIGs, SAMS, anti-aircraft, and small arms fire to successfully accomplish their mission.

Recent graduates who distinguished themselves in the service of their country are 1Lt Donald R. Backlund, 1Lt Ronald T. Rand, Captain Charles T. McMillan II, Lt Col Robert L. Brenci, and Captain David L. Hauck. Lt Backlund led the initial flight of three HH-53 helicopters carrying a boarding party of United States Marines to be placed aboard the USS Holt for use in the recapture of the SS Mayaguez.

Lt Rand served as a crew member and combat photographer. Together they provided cover for rescue attempts and continued to ferry troops in the face of intense hostile fire and severe battle damage. Their efforts significantly contributed to the success of the Mayaguez rescue mission as well as providing spectacular photo coverage of the incident. Captain Backlund died on 29 August 1979 in an A-10 aircraft.

Captain Charles T. McMillan II, Class of 1973, gave his life to rescue the 53 Americans being held hostage in Iran.

Captain McMillan volunteered for this mission and his willingness to risk his life for his fellow Americans and for the honor of our country will long serve as an inspiration to those who choose the Air Force way of life. Flying the lead C-130 on the mission was another Academy graduate, Lt Col Robert L. Brenci, Class of 1963, who earned the 1982 Jabara Award for his cool ability to regroup the rescue operation and return safely.

On 9 May 1981, Captain David L. Hauck, Class of 1971, was killed while performing as a USAF Thunderbird pilot in an air show at Hill AFB, Utah. As a cadet, Captain Hauck held key squadron positions and served as Deputy Wing Commander. During his AF career he flew F-4s, OV-10, F-15s, and reached the top as Number 6 Opposing Solo pilot for the Thunderbirds. Captain Hauck gave his life by sticking with his crippled aircraft in order to protect the civilian community near the airfield rather than eject.

These are but a few of the men who have distinguished themselves in their various fields of endeavor. Some performed in an outstanding manner as cadets, however, most of them graduated without much recognition. These men developed the necessary qualities of leadership and character as cadets and later employed them in the Air Force and in service to our nation.

JABARA AWARD RECIPIENTS

The Jabara Award, named in memory of Colonel James Jabara, is presented each year to the Academy graduate whose accomplishments demonstrate superior performance in fields directly associated with aerospace vehicles.

1968	Captain Donald D. Stevens ('60)	Southeast Asia
1969	Major Terry R. Jorris ('61) and Lt Karl W. Richter ('64)	Aerospace Research (Space Sextant) SEA (first USAFA legendary hero)
1970	Mr (Med Ret) Wayne A. Warner ('63)	SEA
1971	Captain Neil B. Crist ('66)	SEA
1972	Major Steve Ritchie ('64)	SEA
1973	Captain Dale E. Stovall ('67)	SEA (helicopter rescue)
1974	Major Robert A. Lodge ('68)	SEA
1975	Captain Donald R. Backlund ('71) and Captain Ronald T. Rand ('71)	Pilot on Mayaguez rescue Photographer on Mayaguez rescue
1976	Lt Col Michael V. Love ('60)	Test pilot
1977	Major Roger E. Carleton ('67)	A-10 test design
1978	Lt Col (Dr) Wayne F. Kendall, Jr ('60)	Investigating biodynamic effects following loss of F-15 and F-16 canopies
1979	Major Mart H. Bushnell ('64)	Air-to-air weapons in- tegration project
1980	Col Thomas A. LaPlante ('61)	Systems Manager for F-15 and other aircraft

1981 Captain William T. Gillin ('73)

HH-3E pilot; rescue of
survivors from burning
Dutch oceanliner

1982 Lt Col Robert L. Brenci, '63

Lead C-130 pilot on Iranian
rescue attempt

GRADUATE MEDAL WINNERS

Medal of Honor

Lance P. Sijan, '65

SEA POW

Air Force Cross

Donald D. Stevens, '60

SEA, FAC directed rescue

Monte L. Moorberg, '61

SEA, KIA F-105

Phillip V. Maywald, '63

SEA, FAC directed rescue

John B. McTasney, '63

SEA, helicopter rescue

Jackson L. Hudson, '64

SEA, A-1E rescue

Karl W. Richter, '64

SEA, KIA F-105

Richard S. Ritchie, '64

SEA, F-4 pilot ace

Michael C. Francisco, '67

SEA, F-4 mission

Dale E. Stovall, '67

SEA, helicopter rescue

Jeffery S. Feinstein, '68

SEA, F-4 WSO ace

Rowland H. Worrell III, '68

SEA, FAC mission

Joseph A. Personett, '69

SEA, FAC mission

Tilford w. Harp, '70

SEA, C-5A crash

Donald R. Backlund, '71

Mayaguez, helicopter pilot

Richard C. Brims, '71

Mayaguez, photographer



“Air Superiority Blue” by Keith Ferris



MISSION: The mission of the USAFA AOG is to encourage camaraderie among and to provide services to its members and the Academy community, while continuously offering autonomous advice, counsel, and support in furtherance of the Academy mission.

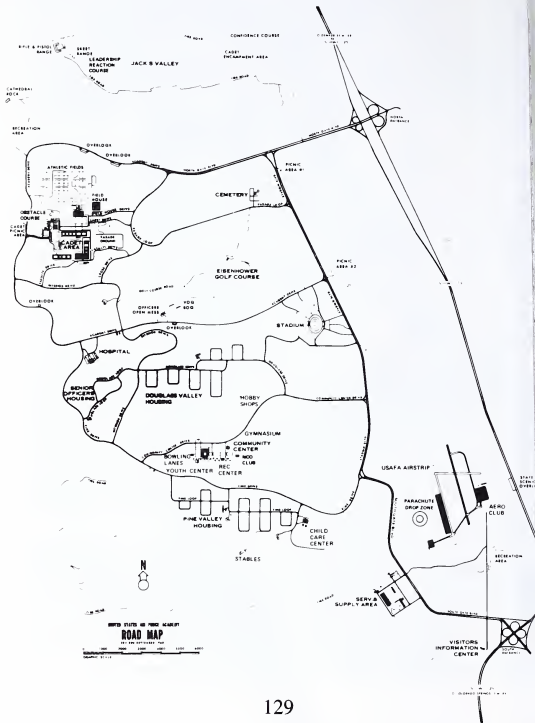
THE ASSOCIATION OF GRADUATES

The Association of Graduates is the Academy's alumni association and is a private, tax-exempt corporation chartered by the State of Colorado. Its primary goals are to provide services to USAFA graduates, support the mission of the Academy, and promote fellowship, pride, and esprit among graduates, their families, and the Academy community.

The AOG promotes many activities to serve USAFA graduates and keeps them informed of current Academy programs and planned projects. The AOG publishes a quarterly magazine, *Checkpoints*, and once a year prepares a *Register of Graduates* to allow all graduates to stay in touch with close friends and classmates. To serve AOG members, the association plans to sponsor a group dental health insurance program in the future, and even sets up group travel programs.

Not only does the AOG serve its membership, it also supports the Academy and the Cadet Wing. For example, the AOG sponsors Homecoming and the 100th Night Dining Out. The AOG also finds sponsors and provides funds for projects like the Graduate War Memorial, the Thunderbird Airmanship Overlook, and the Class Wall. In addition, the AOG helps cadet squadrons set up Airpower Rooms and has helped make improvements to Arnold Hall.

The AOG is an extremely active, young, and exciting organization. The executive director and the board of directors hope each member of the Class of 1987 will survive the rigors of Academy life, meet its challenges, and join the AOG in supporting the mission of the Academy. Good luck over the next four years!



DISPLAYS IN THE CADET AREA

Cadets often escort guests on tours of the cadet area. From parents weekend during their Fourth Class year to graduation, cadets take pride in showing off the beauty and tradition of USAFA. They also take pride in demonstrating their knowledge of the aircraft, buildings and displays in the cadet area.

Aircraft

General Dynamics F-16A Fighting Falcon. Originally a non-flying test bed aircraft, this F-16 was donated from AFSC at Wright-Patterson AFB and is presently painted in the colors of the 57th Fighter Weapons Wing located at Nellis AFB, Nevada.

Lockheed F-104A Starfighter. One of the first twelve F-104's off the assembly line, this plane was used in the flight test program at Edwards AFB, California. It was given to the Academy in 1967.

Republic F-105D Thunderchief. Assembled at McClellan AFB, California from part of at least ten sister aircraft that saw combat duty in Southeast Asia, this aircraft has served as a permanent memorial at the Academy since 1968.

McDonnell-Douglas F-4C Phantom. After being hit by enemy fire, this aircraft was piloted to Chu Lai, South Vietnam. Too badly damaged for any more operational flights, it was obtained by the Utah Air Force Association who rebuilt it and presented it to the Academy in 1970.

Northrop T-38 Talon. This trainer aircraft, similar to those used in Undergraduate Pilot Training (UPT) and formerly flown by the USAF Thunderbirds, was given to the Academy by Randolph AFB, Texas, in 1973.

Northrop X-4 Swallow. One of two experimental aircraft built during the late 1940s, this tailless aircraft was donated by the Air Force museum and has been with the Academy since 1956.

Martin-Marietta SV5-J Lifting Body. The forerunner to the USAF/NASA rocket-powered X-24A and X-24B, the SV5-J Lifting Body provided the data on which the Space Shuttle Orbiter was designed. Built in 1966, the SV5-J was capable of high-speed, maneuverable flight from high altitudes to landings on conventional runways. The Lifting Body used its entire fuselage to provide "lift," and its mission was to explore flight characteristics and to develop pilot techniques for Space Shuttle reentry flights. The SV5-J was presented to the Academy by Martin-Marietta in January 1981.

Buildings.

Arnold Hall. This building was named in honor of General Henry "Hap" Arnold, the first General of the Air Force. It contains a large ballroom, a 3,000 seat theater, snack bars, recreation areas, and an 8-lane bowling alley.

Cadet Chapel. This structure, dedicated in 1963, can seat 1,200 for Protestant services, 600 for Catholic services, and 100 for Jewish services, all conducted simultaneously.

Cadet Fieldhouse. The fieldhouse is divided into three areas: the 1/6 mile indoor track area, the hockey rink with seating for 2,600 spectators, and the basketball arena with a seating capacity of 6,000.

Cadet Gymnasium. Surrounded by athletic fields, the Gymnasium contains 12 basketball courts, two swimming pools, squash and handball courts, and many other facilities.

Fairchild Hall. This building was named in honor of General Muir S. Fairchild, the first commander of the Air University. The building contains 247 cadet classrooms, 78 laboratories, 5 lecture halls, and a library with 477,203 volumes.

Harmon Hall. This building was named in honor of a key figure in the development of the Academy, Lt General Hubert Reilly Harmon. Lt General Harmon was called out of retirement to become the Academy's first Superintendent.

Sijan Hall. This 913 room dormitory was named in honor of Captain Lance P. Sijan, the first USAFA graduate to receive the Medal of Honor.

Mitchell Hall. The cadet dining hall was named in honor of Brigadier General "Billy" Mitchell, a dedicated American advocate of air power during the post-World War I period.

Vandenberg Hall. This 1,320 room cadet dormitory was named in honor of General Hoyt S. Vandenberg, the second United States Air Force Chief of Staff.

Eagle and Fledglings Statue. This two-ton, bronze statue was given as a gift to the Academy from personnel of Air Training Command in 1958.

Pegasus Statue. Located outside on the north side of Arnold Hall, this replica of the mythological winged horse is made of marble and weighs about 8½ tons. The original stands on the grounds of the Italian War College in Florence, Italy. The statue was presented as a gift by the Italian government and dedicated in 1959.

Displays.

War Memorial. (Near Flagpole) This monument is a memorial to the graduates who have lost their lives in

combat. The polished marble monument was presented to the Wing by the Association of Graduates in 1970.

Risner Trophy. This trophy, located in the Air Gardens near the X-4, was named in honor of Brigadier General Robinson Risner. He was shot down over North Vietnam in 1965 and spent 7 years as a POW. The marble and bronze trophy recognizes the outstanding graduate each year from the Tactical Fighter Weapons School at Nellis AFB, Nevada.

Class Wall. The plaques on the chapel wall represent the crests of USAFA graduating classes. The wall is lined with a plaque for each graduating class. The center position on the wall is occupied each year by the crest of the next graduating class. Hence, the crest of the Class of 1984 is now in the center position.

Polaris Tower War Memorial. Located slightly west of the Chapel parking lot, this memorial was given to the Cadet Wing by the American Legion, Department of Colorado. It stands 40'6" high and weighs 5000 lbs. Dedicated on Memorial Day 1981, it stands "in honor of all who have served" our country. The Polaris Tower is the first stage of a planned "Memorial Walk."

Thunderbird Airmanship Overlook. Located on the west side of the Academy Airmanship Overlook stands as a tribute to all Thunderbirds—past, present, and future—and the special relationship the team has with the Academy. The Thunderbirds have traditionally performed for the Academy's graduation each year and they provide a strong role model for Academy cadets. Funded jointly by the AOG and civilian sponsors, the site includes a kiosk with information on the Cadet Airmanship programs and a T-38 painted in the Thunderbird motif.



Thunderbird Airmanship Overlook



ACADEMICS

As one of the nation's service academies, this is a distinctive college. The Academy provides not only an outstanding undergraduate education but also career motivation and leadership training aimed at producing high quality career officers.

The Dean of the Faculty, Brigadier General William A. Orth, is responsible for the academic program. The faculty is divided into 19 departments which are separated into four divisions: Basic Sciences, Engineering Sciences, Social Sciences, and Humanities.

The faculty is comprised of approximately 575 officers, plus NCOs and civilians. Each faculty member is required to possess at least a Master's Degree and be a volunteer. Nearly 30 percent have earned their Doctorates.

The core curriculum, required of all cadets, consists of courses that are split between the social sciences and humanities versus the basic and engineering sciences. The core requirement has proven to be extremely valuable as a basis for a future Air Force career.

The Academy offers a total of 23 majors, the majority of which are in science and engineering. Past experience has shown that approximately 50 percent of the Cadet Wing majors in science or engineering. The Academy also offers a Basic Academic Program. This provides a broad educational foundation for graduation and subsequent service as a professional Air Force officer, without specialization in any particular academic discipline. The number of hours required to graduate from the Academy will vary depending on the individual cadet's academic program.

Many cadets will participate in the Academy Academic Honors Program. This is not a degree program pursued separately from the core curriculum and majors program, but is an opportunity for cadets to participate in some of the core curriculum at a more in-depth level. A small number of cadets will qualify to have the "honors" designation on their Bachelor of Science Degree. Divisional honors seminars are offered to provide an integrated approach to the broad material within a division.

Additionally, most departments at the Academy offer 499 level courses in which students work on independent research of varying levels of sophistication. Other opportunities include work in the Aeronautics laboratory, the Physics laboratories, Engineering laboratories, and the Frank J. Seiler Research Laboratory, all of which carry out research and development on an Air Force wide-scale.

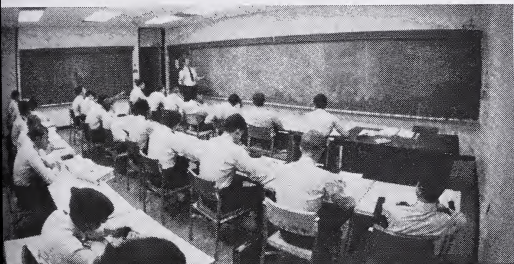
In classes, cadets are frequently graded and called on to demonstrate their knowledge of the day's study material. Cadets who excel in academics (by keeping their grade point averages (GPA) above 3.00) are named to the Dean's list. Those who do poorly and whose GPAs are low, or who have received failing or near failing grades in individual courses, are put on academic probation and receive limited passes until their grades improve.

The Academy emphasizes quality education through small classes (16-18 students per class), highly qualified instructors, and excellent facilities. This type of education has produced many graduates with high levels of achievement. Cadets who maintain both high academic and military standards can compete for the chance to study one semester at the French Air Force Academy in France, the United States Military Academy at West Point, the United

States Naval Academy at Annapolis, or the Coast Guard Academy at New London, Connecticut. Every year cadets also compete for national and international awards including Rhodes Scholarships, and Guggenheim and Fulbright Fellowships.

The Academy has a strong academic history, exemplified by the number of graduates who have received prestigious, highly competitive fellowships. Through the Class of 1982, Rhodes Scholarships have been won by 25 graduates, the first by Brig Gen Bradley C. Hosmer (Class of '59) and the last two by '82 graduates Heather A. Wilson and David S. Fadok. This achievement is truly distinctive; only 32 Rhodes Scholarships are awarded to Americans each year. "Quality of character and intellect," demanded of Rhodes' winners, is a standard at the Air Force Academy.

The United States Air Force Academy has established a proud academic tradition. Tomorrow's Air Force requires officers who are extremely well qualified and current in developments in their fields. The Academy's continuously evolving academic program meets this challenge well.



ATHLETIC TRADITION

The Academy has a strong athletic tradition, indicated by a growing number of All-Americans.

Robert Siteman (Class of '59) was the Academy's first All-American, winning honors in rifle in 1958. The Academy has produced two athletes who won both consensus and academic All-American recognition in football, Brock Strom (1958) and Ernie Jennings (1970).

During the 1981-82 school year, 30 Academy athletes received All-American honors, the highest number in Academy history. Senior Johnny Jackson was the most heralded Falcon football player, being named to the Football Writers All-America besides being selected to several other All-America units. Senior Kevin Ewing was selected to the Academic All-American teams in both football and baseball, making him one of the new major college athletes to receive the same honor in two sports in one year.

In cross country, Rita Burr (Class of '83) was named All-American for the third-straight year while Mary Manning (Class of '85) was honored as All-American in the AIAW Division II and TFA/USA. Eddie Norris (Class of '84) was named All-American in three events, leading Air Force to national titles in standard and air pistol. Women's outdoor track had seven All-Americans, led by Gail Conway (Class of '84) and Diane Elwer (Class of '83) both selected for the second year. The women's swimming team took 12th in the AIAW Division II nationals, with nine Falcons being named All-America. Shawn Whitson and Sandy Maloney (Class of '82) were named for the fourth-straight year while Patty Martinez, Kim Bentler, Linda Telkamp and Nancy Burdick (Class of '83) were named for the third year in a row.

The 195 Academy men and women who have been honored as All-Americans are symbolic of the spirit of the Cadet Wing where the desire to win is strong and growing.



PHYSICAL EDUCATION AND ATHLETICS

The Department of Physical Education plays a very important role in the life of each cadet at the Academy. Under the direction of Colonel John J. Clune, this department has the responsibility for leading the cadet through numerous areas of physical endeavor and instruction designed to maximize the benefits of physical activity. The object of this program is to develop traits of courage, aggressiveness, self-confidence, good physical condition, and an intense desire to win, all of which are essential to an officer in the United States Air Force. From the day a cadet enters the Academy until graduation 4 years later, the cadet must meet the challenge of a rigorous physical program.

Basic cadet summer is the period where the new cadets go through a program of intensive training and rigorous conditioning that demands a high degree of stamina and endurance. This program, consisting of motivational distance runs, obstacle courses, and calisthenics is very challenging. Together with the cadet's introduction to intramurals, it endeavors to provide the basic cadets with the conditioning and competitive spirit that they will need in cadet life and future training. At the end of basic cadet summer, all new cadets can feel proud of the knowledge that they have pushed themselves far beyond the limits which they thought possible, in the process establishing even higher limits to reach during ensuing years.

During the Fourthclass year, physical education classes emphasize upperbody development through courses in gymnastics, boxing, and swimming. Fourthclass women will take a physical development course in place of boxing. Courses taken by Thirdclass cadets include introduction to court sports, tennis and basic combatives. Classes taught during the Secondclass year build upon the principles of fitness, conditioning, strength and endurance emphasized during the first two years. Each Secondclass cadet takes courses in judo, golf and water survival. Firstclass cadets will receive instruction in volleyball, unarmed combat and physical fitness methods. In addition to the three mandatory courses taken each year, cadets are able to select one elective to augment their core physical education courses. Electives include advanced tennis and golf, basic ice skating, racquetball, handball, squash, badminton, basketball, strength training, bowling, air pistol, fencing, aerobic dance, and running techniques.

All cadets who do not compete in intercollegiate sports, or

who are not considered "on-season" for other activities must participate in the intramural program. The intramural sports are as follows: Fall Season - football, soccer, tennis, cross country, softball; Winter Season - boxing, wrestling, handball, swimming, squash, basketball, bowling; Spring Season - volleyball, rugby, water polo, team handball, flag football, and racquetball. The intramural program is probably the most competitive program at the Academy and is appropriately called "intramurder" because of the very spirited competition in all the sports. The cadets develop a good deal of "esprit" for their team and squadron from the intramural program and learn how to work with people both as a team member and as a leader. This ability to "give one's all" for a team and to organize a team to achieve maximum output is a vital characteristic for any future job. The traits developed in the intramural program are not soon forgotten; they remain with a cadet for life.

One of the most coveted trophies within the Cadet Wing is the First Lieutenant John J. Malanaphy Trophy. This trophy is awarded to the squadron that places first in intramural competition. The awarding of this trophy marks the termination of the physical education program each year and for the graduating cadets the termination of a rewarding 4-year physical education program.

THE ACADEMY JOINS THE WAC

Independent intercollegiate status ended for the Air Force Academy on August 29, 1979 when the Presidents' Council voted to accept Air Force as a member of the Western Athletic Conference, with membership effective July 1, 1980.

The decision made Air Force the ninth member of the league, which begins its 21st year of operation this fall. Since its founding in 1962, the WAC has emerged as one of the top athletic conferences in the nation, fielding national caliber teams in all of the ten sports that come under the league's domain. Those ten sports are football, cross country, baseball, basketball, indoor track, outdoor track, golf, swimming, tennis and wrestling.

During the 1981-82 school year, cross country took second place in the WAC championships while John Sayre (Class of '84) won an individual championship in swimming.

During the 1981-82 academic year, Academy varsity athletic teams competed in 524 contests, winning 356, losing 166 and tying 2 for a 68.1 winning percentage. The overall program that included junior varsity teams finished with 382 wins, 187 losses and 3 ties.





1983 AIR FORCE ACADEMY FOOTBALL

DATE	OPPONENT	SITE
Sep 3	Colorado State*	Ft Collins, CO
Sep 10	Texas Tech	USAFA, CO
Sep 17	Wyoming*	Laramie, WY
Sep 24	Brigham Young*	USAFA, CO
Oct 1	San Diego State*	San Diego, CA
Oct 8	Navy	Annapolis, MD
Oct 15	Texas-El Paso*	USAFA, CO
Oct 22	Utah*	USAFA, CO
Oct 29	Army	USAFA, CO
Nov 5	Hawaii*	USAFA, CO
Nov 19	Notre Dame	Notre Dame, IN

* Denotes: WAC game

MILITARY TRAINING

Professional Military Training under the guidance of the Commandant of Cadets begins the day a cadet enters and lasts throughout the entire 4 years. This training is divided into two primary areas. The summers are devoted almost entirely to military training in a wide variety of forms and areas while the academic year finds Professional Military Studies as part of the routine class schedule. Cadets also experience living 24 hours a day in a military environment.

The cadets' first summer at the Academy is known as Basic Summer. It is spent in Basic Cadet Training, or BCT, which helps cadets make the transition from civilian to military life. During this period they are introduced to the military way of life, military customs and courtesies, and basic military skills. This is indeed basic training, but it is run by the upperclass cadets with officer advice.

BCT is divided into two phases. The first takes place in the Cadet Area where the Basic Cadet is introduced to Air Force and Cadet Wing Regulations, the military training system, the Honor Code and professional ethics, Air Force heritage, proper wear of the uniform, drill, rifle manual, and personal hygiene. Basic Cadets receive extensive physical training through participation in intramurals and physical education periods, each stressing a high degree of physical fitness.

The second phase of BCT is conducted in Jack's Valley, a field training area on the northern end of the Academy. These basic cades learn general military skills of teamwork, problem solving, combatives, reconnaissance and physical fitness. Training also includes the Confidence Course, the Assault Course, and the Leadership Reaction Course and pistol training. The training builds confidence, a sense of

accomplishment and pride in each cadet. Basic Summer culminates with Field Day, when basic cadet squadrons compete against each other in athletic contests.



During Third Class Summer, cadets learn Survival, Evasion, Resistance, and Escape (SERE) techniques, then select either Airmanship or a field trip to a stateside Air Force base, known as the CONUS Field Trip. SERE training includes three weeks of land navigation, mountain and water survival, and simulated prisoner of war resistance training.



Exercises are realistic, and cadets must rely on their own skills and a minimum of food and equipment to survive. Third Class summer training concludes with the cadet's first real exposure to the operational Air Force. In the Airmanship program, cadets learn both freefall parachuting and how to pilot a glider. Cadets not enrolled in Airmanship spend two weeks on a field trip at active duty Air Force bases.

During the remaining two summers, the choice of summer programs is much wider. During these summers, cadets complete the summer training core curriculum of one leadership option and one option at an active duty base. Leadership requirements can be filled through command/staff positions in SERE, BCT, or at the Air Force Basic Military Training School at Lackland Air Force Base, Texas. Cadets complete Operation Air Force during their Second Class summer. In this program, they understudy Air Force company grade officers. In addition to these core requirements, many optional programs are available each summer. Additionally, cadets further their flying skills in Academy navigation or pilot indoctrination programs aboard T-41 aircraft.



Upperclass cadets plan, direct and operate all summer training programs. Cadets experience first-hand leadership opportunities by training lower class cadets while receiving minimal direction from commissioned officer advisors.

Additionally, academically qualified upperclass cadets may compete for a limited number of summer research positions. Summer research deals with real Air Force problems and may be conducted at the Academy or at an active Air Force facility. As might be expected, only the best competitors are selected.

During the academic year military training continues, emphasizing individual performance, responsibility and leadership through the Professional Military Training (PMT) Program.

Fourth Class PMT is designed to provide the initial foundation of Air Force knowledge and followership skills necessary to transition a new cadet into the Academy environment and the military profession. It concentrates on developing an appreciation for the qualities of a professional officer while stressing the need for building professional values individually. The entire program provides Fourth Class cadets the background and motivation to become outstanding cadets and officer candidates.

Third Class PMT builds upon the foundation established during BCT and Fourth Class PMT. It prepares cadets for increased levels of responsibility and for the internalization of standards essential to success at the Academy and in the Air Force. Third Class cadets gradually assume an increasing role in training the Fourth Class.

Second Class PMT provides cadets with a practical background in the leadership and management of small units. The emphasis during this program is on the inherent

necessity of accepting the responsibility of command as cadets progress upward through cadet rank structure.

First Class PMT focuses on the cadets' abilities to apply previously learned leadership and management principles. Additionally, it provides cadets with the practical knowledge they will need in the Air Force. Ultimately, First Class PMT helps cadets internalize the concept of duty in the manner expected of commissioned officers.

Each class has a core Professional Military Studies (PMS) course which cadets must complete as part of their academic curriculum.

The Fourth Class course, PMS-110, focuses on the mission, organization and operation of the USAF. It introduces the cadet to the military ethic and professional foundation necessary to become a career officer. It details the structure of the Air Force, the operation of the Department of Defense, and the Air Force's role in support of national objectives.

The second year of instruction, PMS-225, teaches cadets the organizational structure of the U.S. military. Cadets learn the chain of command, communications, intelligence, and command and control of airpower. The course emphasizes decision making in combat.

The course required during the Second Class year, PMS-330, delves deeply into U.S. military doctrine and employment concepts. Cadets relate basic doctrine to current force structures and employment concepts, then relate this to selected force employment issues through exercises and student preparations.

The final course, PMS-440, is taken during the First Class year. It provides the foundation of professional military thought upon which cadets will build throughout their

military careers. It discusses current military strategy including characteristics of the modern battlefield, current conflicts, and the enemy threat.

Flying programs begin during the Basic Summer when each basic cadet takes an indoctrination flight in a glider, helicopter, or T-41, as well as the T-43 navigational trainer. These flights motivate cadets and introduce them to the fundamentals of flight which they will study in class.



Courses in aviation fundamentals and navigation and freefall parachuting are available during the Fourth, Third, Second, and First Class years, and during the Third, Second and First Class summers. An advanced navigation course is offered for the First Class in preparation for Undergraduate Navigator Training. Other navigation courses in avionics and astronomy are available as electives. All navigation training flights are made in the T-43.

During the First Class year, cadets eligible for pilot training may take the T-41 Pilot Indoctrination Program. This light plane flying program is the first step toward earning an Air Force pilot rating and may also be counted toward a private pilot's license. Cadets who do not take T-41 must complete a course in aviation fundamentals and navigation.

Supplementing formal military training at the Academy is a series of lectures and presentations on Air Force developments and leadership. Additionally, each cadet squadron is sponsored by an operational Air Force unit, and usually visit their sponsors once or twice each year.

Military training at the Academy can be defined simply: the training of each cadet occurs during every class and at every formation. Military discipline and adherence to military bearing are first learned as concepts and then put into practice, initially on the basic "follower" level, and later as upperclassmen, on a "leadership/training" level similar to that exercised by company grade officers of the Air Force.

Detailed descriptions of all military academic programs can be found in AFCSW 50-1 and the United States Air Force Academy Catalog, 1983-84.

PROGRAM FOR PROFESSIONAL DEVELOPMENT

The Air Force Academy is a professional school. Our objective is to prepare young men and women to become effective leaders of the military profession.

Professional development programs have four common characteristics. First, these programs provide graduates with that body of knowledge which enables them, with experience and continued educational development, to be an effective leader. Second, professional development programs provide opportunities for graduates to attain the specific skills necessary to function effectively within the profession. Third, these programs seek to provide a set of values to each graduate which is essential for leadership. Fourth, professional development programs seek to develop behavior characteristics in graduates which enable leadership by example. The Air Force Academy has these four objectives for its professional development program: knowledge, skills, values and behavior patterns.

The program for professional development at the Air Force Academy encompasses every course and every experience offered at this institution. The graphical representation below illustrates the programs and the means by which our professional development objectives are achieved: (1) general education courses, (2) professional courses, (3) specialized elective courses, and (4) the Academy experience. Each program may contribute to the four professional development objectives through any one or all of these four means.

Our core curriculum consists of courses required of every graduate. Some of the core courses are primarily aimed at general education objectives; others are more specifically

related to the military profession. Our conception of the general education requirement for future military leaders includes a balanced academic preparation in science, engineering, social sciences, and humanities. These courses help prepare graduates to understand the world around us and man's role in that world. The *general education* requirements in the core are addressed in courses such as world history, basic psychology, world literature, political science, economics, mathematics, physics, chemistry, biology, and others. The core courses more specifically directed to the military profession include both training and education; they are necessary because of the obvious purpose of the Academy as a preparation for the military profession and are not found in the same format at other institutions of higher education. These *professional courses* include leadership, aeronautics, law for commanders, military history, defense policy, light plane flying, and many others.

Some of the courses in the core curriculum, of course, fulfill both general education and specific professional aims of the institution. Courses in management, philosophy, English, foreign languages, engineering, etc., taught by career officers with advanced degrees, are structured to meet both of these goals.

Beyond the core curriculum, *specialized elective* courses are offered as part of the professional development program to enable our graduates to develop and enhance their special interests in academic, military, and physical fitness activities. Cadets are encouraged to participate in a wide variety of elective courses: those structured to fill out the academic major of the cadet's choice, those which suit the cadet's special interests, advanced military studies and military training activities, and advanced physical fitness

programs including participation in intercollegiate athletics. Our catalog contains a complete listing of the courses available in the academic disciplines, airmanship, military training, and physical education.

We call the unique opportunities and experiences afforded our students the "Academy Experience." This "Academy Experience," including life under the cadet Honor Code, is an essential and important part of our professional development program. It is impossible to list all of the things that go into this total experience. It begins the first day cadets enter Basic Cadet Training and ends as our second lieutenants throw their hats in the air at graduation. This "Academy Experience" is different—it is difficult—it is rewarding—it is necessary for the challenges of Air Force leadership. Every organization at the Academy contributes to the "Academy Experience."

Because everything we do is part of the professional development of our graduates, the Superintendent is the director of the professional development program. He is in charge of the total "Academy Experience." The Commandant of Cadets, the Dean of the Faculty, and the Director of Athletics serve as deputy directors of the professional development program and are responsible to the Superintendent for the general education courses, the professional courses, the specialized elective courses, and the "Academy Experience" offered within their organizations. This chain of responsibility ties every unit to the quality of our graduates and their preparation for leadership in the military profession. Everyone at the Academy regards our most important charge to be the preparation of our graduates for the opportunities and challenges as professional Air Force officers.

HONOR AND ETHICS

The nature of the military profession demands that you have high ethical standards because, as an Air Force Officer, your decisions can have a devastating impact on others' lives and property. For this reason, INTEGRITY, or the capacity to do what is right even when it costs you something, must be the basis of an officer's ethics. Without this quality of character, an officer cannot set the proper priorities between self-interest and his or her official responsibilities to the unit, mission, Air Force, and country. The Cadet Honor Committee is the cadet organization chartered to help foster an atmosphere at USAFA to which each cadet can develop and internalize a personal sense of integrity in order to graduate with the character necessary for responsible officership.

The HONOR CODE is the facet of professional ethics most familiar to cadets. At the beginning of the fourth class year, each class takes an expressed oath that "We will not lie, steal, or cheat, nor tolerate among us anyone who does." This oath—simple and direct in its wording—is a contract with the rest of the Wing that each cadet will meet his public responsibilities to the Academy community by putting the Wing's interests above whatever personal advantages would accrue to him by lying, stealing, cheating, or tolerating. The Code represents a minimum standard of honesty that each cadet is expected to surpass. Because it is based on integrity and governs all aspects of cadet life, the Honor Code is perhaps the best officership training that exists at USAFA.

Let us look at each of the four tenets of the Honor Code in turn. LYING—a cadet's word or signature is his bond; regardless of motive, cadets are expected to tell the truth at all

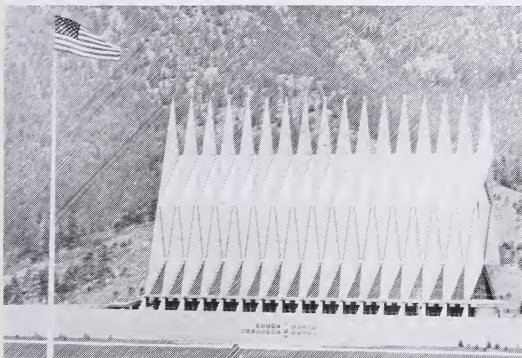
times. **STEALING**—depriving another of the possession or use of his property shows a callous disregard for his rights; cadets are expected to respect these rights at all times. **CHEATING**—taking unfair advantage of others is particularly tempting in a highly competitive academic environment. Cadets must always ensure they are graded on their own work. **TOLERATION**—the Non-toleration clause is the backbone of the Honor Code because the clause makes it clear that each cadet has a personal obligation to enforce ethical standards in the cadet community.

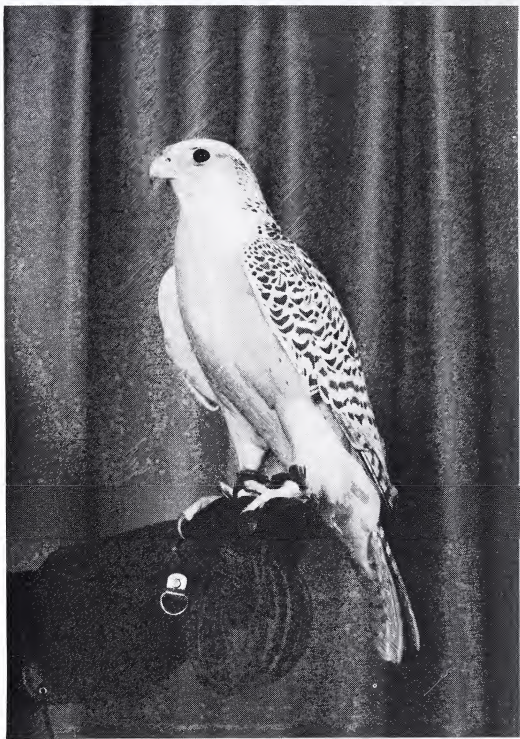
The Honor Code is administered on behalf of the Cadet Wing by the Cadet Honor Committee, whose members are elected from among first and second class cadets in each squadron. Suspected Honor Code violations are investigated by a Squadron First Class Honor Representative. When appropriate, a case is referred to a Cadet Honor Code Board in which eight First Class cadets sit as jurors to hear the evidence and judge whether a violation occurred.

Penalties for violating the Honor Code are severe; they range from temporary suspension to disenrollment. When extenuating circumstances justify it, the cadet jury can also recommend that the Commandant of Cadets grant the guilty cadet 'discretion'. If this recommendation is approved, the cadet is returned to the Wing, is placed on aptitude probation and receives retraining on ethical standards. Cadets found not to have violated the Code are retained in the Wing without prejudice. Cadets who violate the Code and are not granted discretion or offered voluntary suspension by the Superintendent are expected to resign from the Air Force Academy. The *Honor Code Reference Handbook* is the primary source for a more detailed treatment of the Honor Code's administration.

The purpose of the professional ethics education program is to provide cadets a firm understanding of the professional responsibilities of cadets and officers. As a result of this instruction, cadets should recognize that the Honor Code is part of a broad moral point of view based on a personal sense of integrity. Cadets should internalize this spirit of the Code as their guide for conduct and they should avoid gaming the Honor Code or interpreting it in a legalistic manner.

A highly developed sense of honor or integrity is the basis of the officer corps' professional ethics because of the nature of the military profession. Only officers who have these values are worthy of the trust which their nation extends them to guard its security and command others in combat. Life under the Honor Code is realistic training to develop these qualities of character in cadets and prepare them for that trust.





THE FALCON

Strength, alertness, aggressiveness, and poise; these are terms symbolic of the mission of the United States Air Force. These also aptly describe the falcon, chosen by the first class to enter the Academy as the official mascot of the Cadet Wing.

The falcon is a noble bird that catches its prey in flight, killing on impact. It has keen eyesight, a broad wingspan, curved talons, and a hooked beak for fighting. The fastest of all birds, the falcon can reach top speeds of 180 mph. Its ability to turn sharply and to streak only inches above the ground make it one of the most maneuverable of birds.

The white gyrfalcon, Baffin, was the first true mascot of the Cadet Wing. She was named after the northern Canadian island where she was caught. Baffin died in 1978 and is on permanent display in Arnold Hall. Replacing Baffin as the official mascot of the Wing was Glacier, another white gyrfalcon. He was captured in the Seward Peninsula of Alaska on 3 July 1980. The name Glacier symbolizes the strength and majestic beauty of that region. The Academy also has several prairie falcons that are flown in demonstrations at all football games. These falcons are released and allowed to dive toward a lure held by a cadet falconer.

The falcon's speed, power, temperament and courage make it a fitting and proud mascot for the Air Force Academy.

UNITED STATES MILITARY ACADEMY

The US Military Academy is located at West Point, New York, along the Hudson River 50 miles north of New York City. Many tourists are attracted each year to see West Point and its various attractions.

West Point was established in 1802. Since 1817, when Major Sylvanus Thayer, "Father of West Point," took command to establish its renowned system of study and discipline, the "long gray line" has produced such greats as Lee, Grant, Pershing, Arnold, Patton, MacArthur, and Eisenhower.

The Military Academy offers a well-balanced 4-year curriculum in mathematics, science, social sciences, and humanities. Every cadet follows the basic curriculum with an enrichment program open to all those wishing further study. Upon graduation, cadets receive a Bachelor of Science degree plus a commission as Second Lieutenants in the US Army.

Before acceptance into the Corps, however, cadets must go through an intensive summer program called "Beast Barracks." There they learn the fundamentals necessary to become a member of the Corps, and begin to develop the high standards of discipline, personal integrity, leadership, and honor essential to a career officer.

The high point of each year comes in June Week. To the plebe it means the completion of the grueling first year. And to the first classman, it is the culmination of 4 years hard work to earn the coveted gold bars, and an Army commission.

UNITED STATES NAVAL ACADEMY

In 1845, President Polk authorized a naval school at the disbanded Army post at Fort Severn, Maryland. The course of study lasted 5 years with only the first and last spent on land. The naval school officially assumed the title of the United States Naval Academy in 1850, shortening the program to 4 years. During the Civil War the Academy moved to Newport, Rhode Island, where first and second classmen were commissioned. At the conclusion of hostilities in 1865 the Academy was established at Annapolis, Maryland.

In 1873, the program was lengthened to 6 years, the last 2 years spent at sea. By 1912, the course returned to 4 years, but was shortened to 3 years during the Spanish-American War and the two World Wars. Today the midshipman graduates with a Bachelor of Science degree and a commission as an Ensign. It is interesting to note that the cadet housing facility, Bancroft Hall, is the largest in the world.

The "Esprit de corps" of the Navy is generated and maintained at the Naval Academy; throughout its history the Naval Academy has produced many fine officers.

UNITED STATES COAST GUARD ACADEMY

The Coast Guard Academy was chartered in 1876 when nine cadets boarded the schooner Dobbin for initial training. From 1878 to 1907 the new 250-ton bark, the Chase, served as the cadet training ship. After numerous changes in location from Curtis Bay, Maryland; the training ship Itasca;

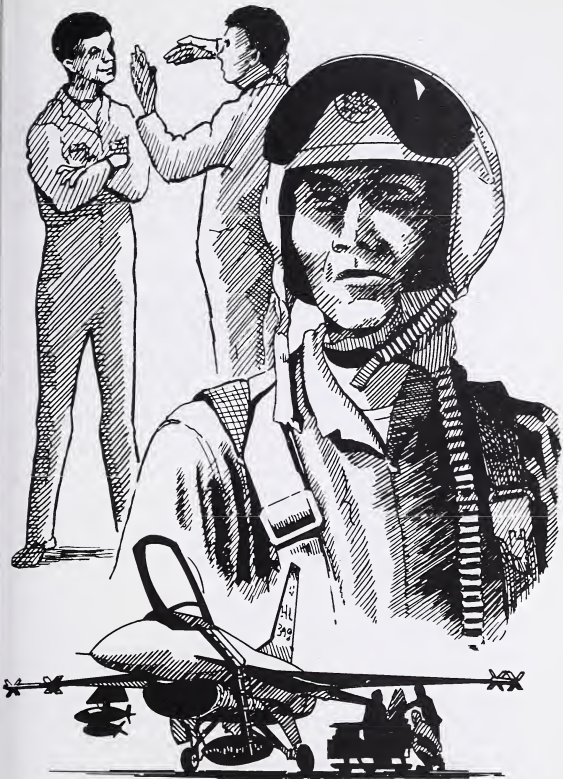
Portsmouth, New Hampshire; Port Royal, South Carolina; Fort Trumbull, Connecticut; and another ship, the Alexander Hamilton; the site was finally established in 1932 in New London, Connecticut.

The present cadet corps of 600 is divided into four classes. The initial training period, "Swab Summer," is much like that of the other service academies in that it is a time for learning about the service, the Academy, and the basic rudiments of seamanship. After the first year, cadets are taken on a summer cruise on the present training ship, the Eagle. Visiting foreign ports and those along the United States coastline, the cruise acquaints them with active duty work conditions and gives them a practical knowledge of seamanship. Each cadet graduates with a Bachelor of Science degree and a commission as an Ensign in the Coast Guard.

This Academy provides its service with the majority of its active duty commissioned officers.

UNITED STATES MERCHANT MARINE ACADEMY

In 1938, the United States Merchant Marine Cadet Corps was officially founded. Four years later instruction was begun at Kings Point, Long Island, New York. Three of the 4 years of the cadets' training are spent at the 65 acre campus at Kings Point. One half of the third and second class years are spent at sea on ships of the Merchant Marine. The Academy's purpose is to furnish a Bachelor of Science degree and training for future officers of the Merchant Marine.



U. S. AIR FORCE

MAJOR COMMANDS

While the mission of the United States Air Force is often paraphrased as “to fly and to fight” the structure of the Air Force that makes that possible includes a great number of support organizations. The overall effectiveness of the Air Force depends on the mutual support and cooperation of all its components.

Major Air Commands:

- Air Force Communications Command (AFCC)
- Air Force Logistics Command (AFLC)
- Air Force Systems Command (AFSC)
- Air Training Command (ATC)
- Alaskan Air Command (AAC)
- Electronic Security Command (ESC)
- Military Airlift Command (MAC)
- Pacific Air Forces (PACAF)
- Space Command (SPACECOM)
- Strategic Air Command (SAC)
- Tactical Air Command (TAC)
- US Air Forces in Europe (USAFE)

Separate Operating Agencies:

- Air Force Accounting and Finance Center (AFAFC)
- Air Force Audit Agency (AFAA)
- Air Force Commissary Service (AFCOMS)
- Air Force Engineering and Services Center (AFESC)
- Air Force Inspection and Safety Center (AFISC)
- Air Force Intelligence Service (AFIS)

Air Force Legal Services Center (AFLSC)
Air Force Manpower and Personnel Center (AFMPC)
Air Force Medical Services Center (AFMSC)
Air Force Office of Security Police (AFOSP)
Air Force Office of Special Investigation (AFOSI)
Air Force Service Information and News Center
(AFSINC)
Air Force Test and Evaluation Center (AFTEC)

Direct Reporting Units:

Aerospace Defense Center (ADC)
Air Force Reserve (AFRES)
Air Force Technical Applications Center (AFTAC)
Air National Guard (ANG)
Albert F. Simpson Historical Research Center
United States Air Force Academy (USAFA)

SAC



Headquarters: Offut AFB, Nebraska

SAC is the United States Air Force's long range strike force composed of a mixture of combat aircraft and intercontinental ballistic missiles (ICBMs). The mission of SAC is to maintain a global force to deter aggression during peace time and destroy an enemy's war-making capability in war time conditions. In keeping with its mission, SAC's motto is "Peace is Our Profession."

SAC's airborne command post, a Boeing EC-135 containing a general officer, is constantly airborne for survivability. This aircraft is normally referred to by its nickname "Looking Glass."

Within the continental United States there are two numbered air forces and a missile division: Eighth Air Force, Barksdale AFB, Louisiana; Fifteenth Air Force, March AFB, California; and 1st Strategic Aerospace Division, Vandenberg AFB, California. SAC also has two air divisions overseas: Third Air Division, Anderson AFB, Guam and Seventh Air Division, Ramstein AB, Germany.

Approximately 335 B-52s, 65 FB-111s, 600 KC-135s, and 2 KC-10s comprise the bomber-tanker force. This force has global range through aerial refueling. The bombers are equipped with the following weapons: short range attack missiles (SRAM) released by the B-52 and FB-111 providing standoff capability, nuclear gravity weapons, and a variety of conventional ordnance.

Approximately 40 percent of the bomber-tanker force is on ground alert all the time, positioned to take off within the warning time of an ICBM attack provided by the Ballistic Missile Early Warning System (BMEWS). The missile force is composed of 52 Titan II, 450 Minuteman II, and 550 Minuteman III ICBMs. The Titan II is a liquid fueled missile and has the largest warhead of all US missiles. The Minuteman II has improved range over early models. Minuteman III is able to employ Multiple Independently-targeted Reentry Vehicles (MIRVs). All Minuteman missiles are solid fueled.

SAC is the Air Force's single manager for tanker operations, providing air to air refueling for all USAF fixed

wing aircraft and supporting most refueling requirements for the other services.

Strategic reconnaissance is also provided by SAC. The SR-71 (a mach 3 + aircraft) and U-2 ensures accurate intelligence information is available when needed.

This combination of manned bombers and unmanned ICBMs provide SAC with a flexible and survivable strategic force. They are two parts of our strategic Triad force. Combined with the Navy's sea-launched ballistic missiles (SLBMs), they guarantee the effectiveness of our deterrent strategy.

TAC



Headquarters: Langley AFB, Virginia

The mission of the Tactical Air Command is to deploy U.S. general purpose air forces anywhere in the world on a moment's notice for tactical air operations in support of national security, and to provide combat ready forces to defend North America against aerospace attack.

TAC forces are assigned the responsibility for: (1) *Counterair* — gain and maintain air superiority, (2) *Air Interdiction* — deny an enemy's combat forces the supplies, mobility, and troops needed for sustained operations, (3) *Close Air Support* — destruction of enemy forces in support of friendly troops in the immediate battle area, (4) *Tactical Air Reconnaissance* — obtain information of enemy activities. (5) *Tactical Electronic Combat* — use electronic

means to retain tactical initiative, (6) *Special Operations* — highly specialized force for unconventional warfare, (7) *Tactical Air Control* — provide systems to rapidly deploy and employ forces in any tactical situation. In addition TAC provides F-4s, F-106s, and F-15s for air defense alert under the operational control of NORAD. These functions give TAC one of the most versatile capabilities in the Air Force.

With headquarters at Langley AFB, Virginia, TAC directs the operations of two numbered air forces: the 9th Air Force, Shaw AFB, South Carolina, and 12th Air Force, Bergstrom AFB, Texas. TAC also controls the USAF Southern Air Division, USAFSO, in Panama. TAC also directs the Tactical Air Warfare Center, Eglin AFB, Florida, the Tactical Fighter Weapons Center, Nellis AFB, Nevada, and the Special Operations Force, Eglin AFB, Florida.

USAFE



Headquarters: Ramstein AFB, Germany

The United States Air Forces in Europe was formed in 1945. USAFE's job is to train and equip Air Force units assigned to NATO, and to aid NATO nations in the development of their air forces. All USAFE-NATO missions are directed by the Supreme Allied Commander, Europe (SACEUR).

The USAFE forces operate throughout Western Europe and the Middle East. The three numbered air forces of

USAFE are: 3rd Air Force, RAF Mildenhall, England; 16th Air Force, Torrejon AB, Spain; 17th Air Force, Sembach, Germany. The primary fighter aircraft in Europe is the F-4 with many of the older F-4s being supplanted by the new F-4Es and F-16s. F-111s, F-15s and A-10s are also used to complement the tactical role USAFE plays in Europe.

AAC

Headquarters: Elmendorf AFB, Alaska



The mission of the Alaskan Air Command is to train and employ combat ready tactical air forces to preserve the national sovereignty of U.S. lands, waters, and airspace.

AFSC

Headquarters: Andrews AFB, Maryland



Air Force Systems Command is responsible for advancing aerospace science and technology and developing and acquiring superior aeronautical and space systems that are cost effective and logistically supportable.

ESC



Headquarters: San Antonio, Texas

The Electronic Security Command combines the missions and responsibilities of the former Security Service with a new major mission in command, control and communication countermeasures. ESC supports USAF commanders in protecting command and control systems while denying the enemy use of his. ESC also is the USAF component of the US cryptologic system.

AFRES



Headquarters: Robins AFB, Georgia

The mission of the Air Force Reserve is to provide combat ready units and trained individuals in time of war or national crisis. This Direct Reporting Unit manages all of the Air Force Reserve units. These units perform the same missions as the active force and often have operational Air Force missions. The Air Force Reserve is the USAF's primary source of additional forces in an emergency.

ANG



Headquarters: HQ USAF, Washington, D.C.

The Air National Guard (ANG), while not a formal part of the USAF, is another important source of aircraft and trained personnel to augment active duty forces during a crisis. These state militia units fly the same aircraft and train for the same missions as active duty Air Force units.

Further information on these and all other Air Force organizations may be found in your Military Studies text books and Air Force Magazine.

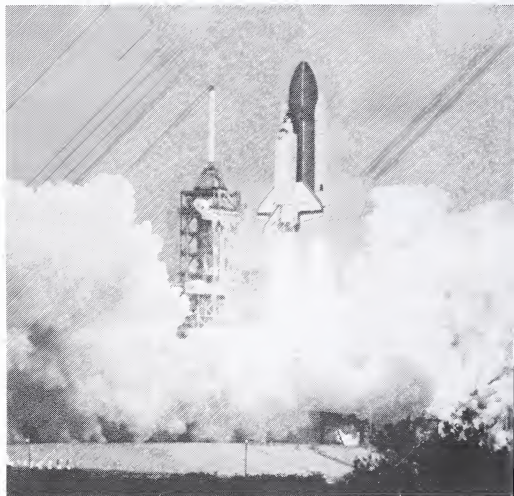
SPACECOM



Headquarters: Peterson AFB, Colorado

Space Command is an operational command which manages, controls, and protects assigned operational space assets. The command promotes a closer relationship between the space research and development community and operational users; and it provides a focus for centralized planning and consolidated requirements. SPACECOM is also an advocate for operational space systems. The Space Command will operate the Consolidated Space Operations

Center (CSOC) to be constructed nine miles east of Peterson AFB. The CSOC, with 1,800 people, will be both a satellite control facility and a shuttle control facility. There will be a close operational linkage between CSOC and the Space Defense Operations Center in the NORAD Cheyenne Mountain Complex. Another element of the Space Command is the 1st Space Wing. The wing provides day-to-day management for 24 operational sites and four Air Force bases assigned to Space Command.



AFLC



Headquarters: Wright-Patterson AFB, Ohio

The Air Force Logistics Command provides materiel support to all forces in the Air Force. Weapons, ammunition, parts for aircraft and vehicles, etc., are among the varied articles the AFLC supplies. Since logistics has been a difficult task for armed forces throughout history, the AFLC has employed the concept of the Air Logistic Center (ALC), each of which (there are five) specializes in maintaining different aircraft and systems. The war in Vietnam called for new concepts such as Rapid Area Maintenance (RAM) teams. The command also has two specialized units: the Military Aircraft Storage and Disposition Center and the Aerospace Guidance and Metrology Center to maintain and calibrate precision instruments.

ATC



Headquarters: Randolph AFB, Texas

The Air Training Command supplies the qualified personnel needed to man the various USAF weapons systems. ATC provides many different types of training,



“The Right Stuff . . .”

ranging from basic military training at Lackland AFB, Texas, to technical training in any of the wide variety of career fields in the Air Force. Pilot training, a major portion of ATC's work, is conducted in the T-41, T-37, and T-38. Professional Military Education is conducted by ATC at Air University, Maxwell AFB, Alabama. ATC has been responsible through its programs for the success of our air forces throughout the world.

Pilot Training

Air Force Pilots are among the best trained and most professional aviators in the world. After many hours of classroom preparation and practical instruction in basic flying skills received from the Air Training Command, the new pilot is ready for assignment to any aircraft in the USAF.

The Undergraduate Pilot Training (UPT) course includes 1,000 hours of involvement in a 49-week course. Major portions of this training are 176 flying hours, 364 hours in ground training and 124 in officer development, and 66 hours in the integrated flight simulators.

The flying program is separated into two phases. Phase I training begins in the Cessna T-37 jet trainer. It is a twin engine, subsonic jet which is versatile enough to have been used by the USAF and Vietnamese Air Force in its combat version (A-37). Training in this phase includes 75 hours of flying in the T-37.

Phase II training is conducted in the Northrop T-38 Talon, a twin engine aircraft capable of speeds up to Mach 1.2 (800 mph). The student receives 101 hours in the Talon, but flying is not the only training he receives.

Additional procedural training in UPT, UNT and UHT is now being accomplished in student-actuated, programmed learning centers where students can receive individual instruction through the use of short training films and tapes.

Professionalism is stressed in subjects dealing with physiology, navigation, flight planning and safety. Emphasis is placed on physical training through a 98-hour program.

The completion of UPT is an end to basic flying and a beginning to the officer's flying career.

The six UPT bases are:

Columbus AFB, MS
Laughlin AFB, TX
Reese AFB, TX

Vance AFB, OK
Williams AFB, AZ
Sheppard AFB, TX

Navigator Training

All United States Armed Forces Undergraduate Navigator Training (UNT) is conducted at Mather AFB (Sacramento) California. During the 28-week basic UNT Course a student receives a total of 29 T-37 flying hours devoted to instrument, contact, and visual low level flight. Another 153 hours of T-43 flying and support are dedicated to basic navigation procedures and techniques. The T-43 is the military version of the Boeing 737, and radar, celestial, and maritime techniques are incorporated at both high and low altitudes. An additional 98 hours are spent in the T-45 navigation simulator and 394 hours are spent in class.

Upon completion of UNT, the newly-rated navigator has several options available. The new navigator may continue on to a 4-week advanced navigation program that leads to

transports, tankers, or special operations; or continue on to a tactical navigation program that leads to fighters and reconnaissance operations. Alternately, the new navigator can choose advanced training in radar bombardment or electronic warfare.

The navigator flies in every command and in nearly every type of aircraft from the F-4 to the C-5, directly contributing to the success of their missions. Measures have been taken to provide enhanced long range career opportunities, more responsibilities, and increased potential for command. Select navigators serve as flight commanders, squadron and wing operations officers, squadron and wing commanders and vice commanders in flying and missile units. Along with other rated officers, navigators may also complete career broadening duty in nonrated career fields, especially in research and development, logistics, or as instructors and staff for pre-commissioning sources and professional military education programs.

Undergraduate Helicopter Training

Undergraduate helicopter training is conducted at Fort Rucker, Alabama. The course of instruction is 36 weeks long, with initial instruction in the Hughes TH-55 primary trainer. Fifty hours are spent in the TH-55, with approximately 15 hours solo. From there, the student progresses to the Bell UH-1H for 25 hours of dual instruction, followed by 55 hours of instrument instruction, 35 of which are simulated. Four weeks of night flying is the next requirement, followed by 65 hours of combat skills training. This is the last phase of undergraduate helicopter

training, after which the student is awarded his/her wings. The next block of helicopter instruction is conducted at Kirtland Air Force Base, New Mexico. The 1550th Aircrew Training Wing at Kirtland instructs the students in the operation of the helicopter they will use in the Air Force. Among these are the UH-1N, the HH-53, and the HH-3.

MAC

Headquarters: Scott AFB, Illinois



The Military Air Transport Service (MATs) established in 1948, immediately proved its capabilities by helping to break the Berlin Blockade. On 1 January 1966, MATs changed its name to the Military Airlift Command (MAC), on 1 December 1974 it was identified as the single manager operating agency for airlift, and on 1 February 1977 became a specified command. Its mission, however, remains the same, to provide strategic and tactical airlift to support the fighting forces of the United States and to serve the humanitarian needs of people everywhere.

MAC's resources are separated into three types of organizations: airlift components, technical services, and special wings. The airlift units are: 21st Air Force, McGuire AFB, New Jersey, which controls MAC operations from east of the Mississippi to Calcutta, India; 22nd Air Force, Travis AFB, California, which controls operations west of the Mississippi to India; and commercial airlift, as

MAC is the single manager for airlift service within the DOD, supplying commercial airline support through the Civil Reserve Air Fleet (CRAF), to back up MAC's strategic and tactical airlift forces.

The technical services of MAC are broken into the Aerospace Audio-Visual Service (AAVS) at Norton AFB, California; Air Weather Service (AWS), Scott AFB, Illinois; Aerospace Rescue and Recovery Service (ARRS), Scott AFB, Illinois. Finally, the special wings of MAC provide medical evacuation, and transportation for the President and his staff.

PACAF

Headquarters: Hickam AFB, Hawaii



The Pacific Air Forces, the air component of the United States Pacific Command (PACOM), is responsible for aerospace operations in the Central and Western Pacific, the Far East and Southeast Asia. The PACAF mission is to provide mobile, tactical forces for any emergency; assist friendly nations; provide intratheater airlift; support the air aspects of the Military Assistance Program (MAP); and aid in US military and civilian space programs.

AFCC

Headquarters: Scott AFB, Illinois



The Air Force Communications Command (AFCC) provides command and control communications, data automation and air traffic control services, as well as meteorological equipment and support, for Air Force units and specified Department of Defense functions throughout the world.

AFCC communications responsibilities include automatic voice and digital data communications networks (AUTOVON and AUTODIN), automatic secure voice communications (AUTOSEVOCOM), long-haul communications systems such as tropospheric scatter radio and satellite communications, and tactical/mobile communications for the Air Force. In keeping with its motto, AFCC is truly "Providing the Reins of Command."

But AFCC responsibilities extend beyond the Air Force communications mission. As the single manager for USAF general purpose data automation resources, both hardware and software, AFCC provides computer services at 120 Air Force installations worldwide. AFCC provides all Air Force navigational aids; such as, Tactical Air Navigation (TACAN) and Radar Approach Control (RAPCON) facilities; as well as air traffic control services at Air Force bases in the United States and overseas. Additionally AFCC operates and maintains specialized aerospace defense radar systems, such as the Pave Paws phased-array radars and the AN/FPS-85 spacetrack system, in addition to USAF weather radar and weather satellite systems.

Employing over 50,000 personnel in 49 states and 22 foreign countries, the Air Force Communications Command is the most widely dispersed Major Air Command.

UNITED STATES AIR FORCE

Operational Aircraft

Attack/Observation

Bomber

Fighter

Helicopter

Reconnaissance/Special mission

Trainer

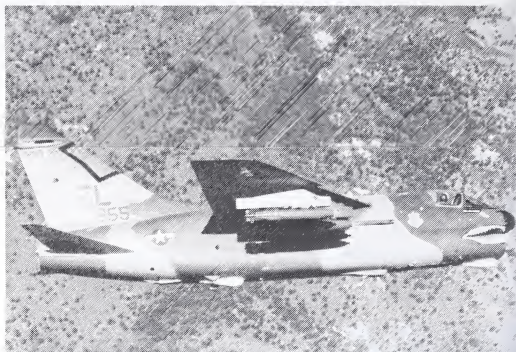
Transport/Tanker

Operational Strategic Missile Systems

Operational Space Systems



- Alpha-numeric Designation
- Mission Category
- Mission Profile



VOUGHT A-7 CORSAIR II

Attack/Observation

Ground attack/Close air support

The A-7D Corsair II is a single-seat, subsonic tactical fighter, 459 of which were delivered to the USAF between 1968 and 1976. The 354th TFW, first operational unit equipped with A-7D, demonstrated the outstanding target kill capability of the type in Southeast Asia. Accuracy is achieved with the aid of a continuous-solution navigation and weapon-delivery system, including all-weather radar bomb delivery. Since 1973, A-7D, including all those operated formerly by the active AF, have been delivered to ANG units in ten states and Puerto Rico, representing the first new aircraft received by these units in more than 20 years. To facilitate transition training, 42 two-seat A-7Ks have been funded. The aircraft's combat capability is retained.



FAIRCHILD REPUBLIC A-10 THUNDERBOLT II

Attack/Observation

Ground attack/Close air support

Designed specifically for the close air support (CAS) mission, the A-10 offers a combination of large military load, long loiter, and wide combat radius. It can carry up to 16,000 lb of mixed ordnance with partial fuel, or 12,086 lb with full internal fuel. The 30-mm GAU-8/A gun can fire 2,100 or 4,200 rds/min. and provides a cost-effective weapon with which to defeat the whole array of ground targets encountered in the CAS role, including tanks. The A-10 achieves its survivability through a combination of high maneuverability and design features that make it a "hard" aircraft. Equipment includes a head-up display, laser seeker, target penetration aids, and associated equipment for Maverick missiles. When all 727 A-10s have been delivered, they will equip six wings.

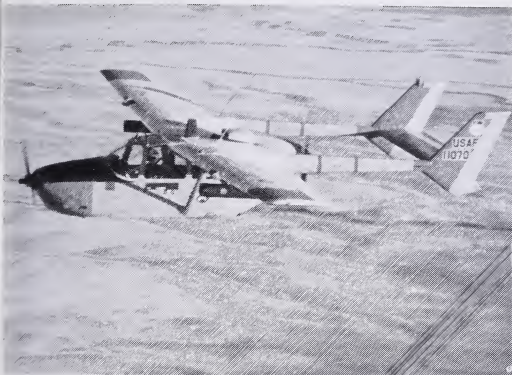


LOCKHEED AC-130 SPECTRE

Attack/Observation

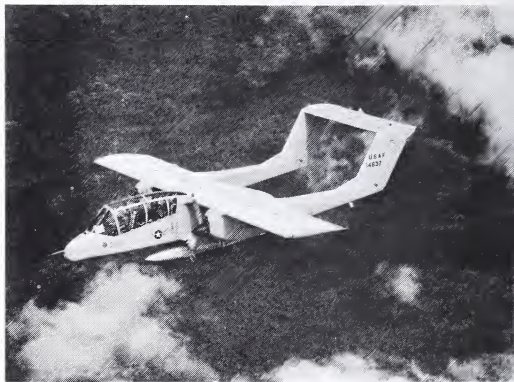
Interdiction

AC-130As serve with the Air Force Reserve's 711th SOS at Eglin AB, Florida. AC-130Hs continue in active service with TAC's 1st Special Operations Wing. AC-130As are equipped with two 40-mm cannon, two 20-mm Vulcan cannon, and two 7.62-mm Miniguns. AC-130Hs are similar, except that one 40-mm cannon is replaced with a 105-mm howitzer. Both models are equipped with sensors and target acquisition systems, including forwardlooking infrared and low-light-level TV (LLLTV). AC-130Hs are being modified for inflight refueling.



CESSNA O-2A
Attack/Observation
Forward air control

A total of 346 specially equipped variants of the "push-and-pull" Cessna 337 Skymaster was ordered by USAF from 1966, originally to replace the Cessna O-1 in the forward air controller role in Vietnam. Though OA-37s will replace some O-2s, these aircraft are still to be used in active and ANG units. Specialized equipment and electronics in the O-2A permit control of air strikes, visual reconnaissance, target identification and marking, ground-air coordination, and damage assessment.



ROCKWELL INTERNATIONAL OV-10A BRONCO

Attack/Observation

Forward air control/Ground support

This counterinsurgency combat aircraft, first flown in August 1967, was acquired by USAF for use in the forward air control role, and for limited quick-response ground support pending the arrival of tactical fighters. One hundred and fifty-seven were delivered to USAF before production of the OV-10A for the US services ended in April 1969. Versions are also in service with USN, US Marine Corps, and foreign air forces.



CESSNA OA-37B DRAGONFLY

Attack/Observation

Forward air control/Ground support

A-37B Dragonfly ground support aircraft being withdrawn from operational service with the AFRES are being changed to forward air control duty, replacing O-2As in some ANG squadrons. There are some of the aircraft in the TAC inventory.



ROCKWELL INTERNATIONAL B-1B
Bomber
Low-altitude penetration bombing

Using long- and short-range standoff weapons, together with gravity bombs, the B-1B will provide the ability to attack imprecisely located and fixed targets. The use of a variable-geometry, or swingwing configuration enables the aircraft to become airborne more quickly, using much shorter runways. The new aircraft will be designed to operate from less sophisticated airfields, with shorter runways, thus reducing the possibility of a successful surprise enemy missile attack, as the B-1B force would be dispersed throughout the country. The B-1B also will be equipped with electronic jamming equipment, infrared countermeasures, radar location and warning systems, and other devices necessary to defeat enemy defensive systems.



BOEING B-52G/H STRATOFORTRESS

Bomber

Strategic bombing/Sea-surveillance

Although well into its third decade of operational service, the B-52 Stratofortress still constitutes the major piloted element of SAC. Three hundred and sixteen aircraft, supported by small numbers of training, backup, and test aircraft, make up the B-52 operational force, and are capable of delivering a wide range of weapons, including conventional and nuclear bombs, and nuclear tipped air-to-surface short-range attack missiles. Apart from its primary strategic mission, the B-52 can be deployed in four conventional roles: show of force; area denial; precision strikes; and defense suppression. Other missions in recent years have included sea-surveillance flights in cooperation with the US Navy and support for NATO exercises.

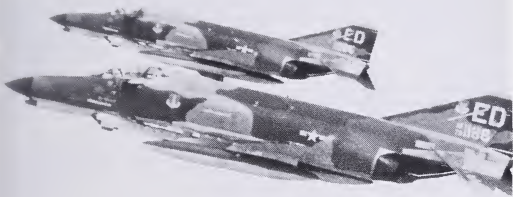


GENERAL DYNAMICS FB-111A

Bomber

Low-altitude penetration bombing

A two-seat, medium-range, high altitude strategic bomber version of the basic swingwing F-111, the FB-111A was developed originally to provide SAC with a replacement for some of its B-52C/F versions of the Stratofortress and B-58A Hustlers. It is also capable of supersonic speed at sea level. The first of 76 production aircraft flew in July 1968, and the initial delivery was made in October 1969 to the 340th Bomb Group. Operational units equipped with a total of 58 FB-111As are the 380th and 509th Bomb Wings.



McDONNELL DOUGLAS F-4 PHANTOM II

Fighter

Counterair/Close air support/Interdiction/SAM suppression

Originally designed as an interceptor for the Navy, the F-4 has been the mainstay for TAC since the 1960s. The F-4C was the first model used by the Air Force. Because it was designed as an interceptor, it did not have an internally mounted gun, so gun pods were developed for the D model for use in Vietnam. The E model was the first to have an internal gun mounted in the nose and is the model used to the greatest extent by the Air Force. When equipped for the ground attack role, the F-4 can carry almost any conventional ordnance in the inventory. When configured for air-to-air combat, the F-4 carries the Sparrow and Sidewinder missiles. The F-4G is modified for a SAM suppression role and carries numerous ECM systems, along with various air-to-surface weapons.



NORTHROP F-5E TIGER II

Fighter

Dissimilar air combat training

Developed as the successor to Northrop's F-5A export fighter, the Tiger II is intended primarily to provide America's allies with an uncomplicated air-superiority tactical fighter, which can be operated and maintained relatively inexpensively. The single-seat F-5E, first flown in August 1972, is basically a VFR day/night fighter with limited all-weather capability. Design emphasis is on maneuverability rather than high speed, notably through the use of maneuvering flaps. TAC operates two "aggressor squadrons" of camouflaged F-5Es, simulating late-model MiG threat aircraft, in "Red Flag" exercises at Nellis AFB, NV. Similar training is provided by F-5Es of the 527th Tactical Fighter Training Aggressor Squadron, by USAFE, at RAF Alconbury, England; and by PACAF's 26th Tactical Fighter Training Squadron, located at Clark AB, Philippines.



MCDONNELL DOUGLAS F-15 EAGLE

Fighter

Air superiority

Since the mid-'70s, the original single-seat F-15A and two-seat F-15B have progressively replaced the F-4 as USAF's primary air-superiority aircraft. Specialized equipment in the F-15 includes a lightweight Hughes radar system for long-range detection and tracking of small high-speed objects operating at all heights down to treetop level, and for ensuring effective weapons delivery, with a head-up display for close-in dogfights. The IFF system embodies a Hazeltine interrogator to inform the pilot if an aircraft seen visually or on radar is friendly; an inertial navigation system is fitted. Eight world time-to-height records were set by the specially prepared F-15 Streak Eagle in early 1975, of which six remain unbeaten, including climb to 20,000 m (65,616 ft) in 2 min 2.94 sec.



GENERAL DYNAMICS F-16 FIGHTING FALCON

Fighter

Counterair/Ground attack

Evolved from the USAF Lightweight Fighter Prototype Program, the F-16 incorporates advanced technologies which make it one of the most maneuverable fighters ever built. The advances include: decreased structural weight through the use of composites; fly-by-wire flight controls with side stick force controller; high *g* tolerance/high visibility cockpit with a 30-degree reclined seat and single-piece bubble canopy; and automatically variable wing leading-edge flaps. Other equipment includes a multimode radar with clutter-free look-down capability, advanced radar warning receiver, a head-up display, internal chaff or flare dispensers, and a 500-round 20-mm internal gun. The Air Force Thunderbird Air Demonstration Squadron is reequipping with the F-16 for the 1983 season.

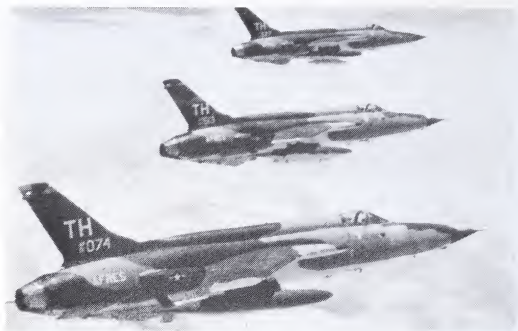


MCDONNELL DOUGLAS F-101B VOODOO

Fighter

Long-range interception

Operated by the ANG, this two-seat long-range all-weather interceptor is assigned to Tactical Air Command as part of the air defense interceptor force for the continental US. Half of ANG's 36 remaining Voodoos, based at Ellington AFB, Tex., were scheduled for replacement by F-4Cs last year. The aircraft continues to serve with the Canadian Armed Forces under NORAD control.

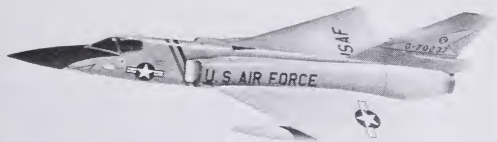


REPUBLIC F-105 THUNDERCHIEF

Fighter

Ground attack/SAM suppression

Several F-105D single-seat all-weather fighter-bombers remain in squadron service with the AF Reserve, equipped with NASARR monopulse radar, for use in both high- and low-level missions, and Doppler for night or bad weather operations. Also in the Reserve are a few F-105F two-seat dual-purpose trainer/tactical fighter versions of the F-105D. The two squadrons of the active Air Force which flew the F-105G all-weather "Wild Weasel" version of the two-seat F-105, intended for suppression of surface-to-air missile sites, with electronic counter-measures pods mounted on the underfuselage, have reequipped with F-4G "Wild Weasels." The F-105Gs have been transferred to the ANG. Typical armament load comprises four Shrike missiles or two Standard ARMs.



CONVAIR F-106 DELTA DART

Fighter

Long-range interception

The F-106 all-weather fighter was developed in the mid-1950s. Constant updating enabled USAF to maintain its effectiveness, and 153 continue to serve with active Air Force and ANG units. The two production versions are the F-106A single-seat interceptor, and the F-106B, a tandem two-seat dual-purpose combat trainer. The F-106's MA-1 electronic guidance and fire-control system has been updated periodically. Other modifications have included installation of supersonic drop tanks, in-flight refueling and a 20-mm cannon, which gives greater effectiveness against low-altitude/ECM maneuvering targets.



GENERAL DYNAMICS F-111
Fighter
Interdiction

Four versions of this pioneer variable-geometry tactical fighter are currently in service with USAF. Initial F-111A aircraft, delivered to a training unit in July 1967, were development models. This version served with distinction in SEA in 1972-73 and currently equips the 366th TFW. The A was superseded in production by the F-111E, a version with modified air intakes which improved engine performance above Mach 2.2. The F-111D had from the start advanced avionics, offering improvements in navigation and air-to-air weapon delivery. The F-111F, of which 106 were built, has uprated turbofans. It is being modified to carry in its weapons bay the Pave Tack system, which provides a day/night capability to acquire, track, and designate ground targets for laser, infrared, and electro-optically guided weapons.



BELL UH-1F/HH-1H/UH-1N

Helicopter

Rescue/Missile site support

Basically a military version of the Bell Model 204, the UH-1F was developed to take part in a design competition for a missile site support helicopter. USAF ordered 146, of which the first flew in February 1964. A few UH-1Fs were modified to UH-1Ps for classified psychological missions in Vietnam. TH-1F is a version of the UH-1F used for instrument operations training. In November 1970, USAF ordered 30 larger 12/15-seat HH-1Hs, based on the Model 205, for local base rescue duties. Deliveries were completed in 1973. A total of 66 of all of these helicopters are currently in service. The UH-1N is a twin-engined version of the UH-1 utility helicopter.



SIKORSKY CH-3/HH-3 JOLLY GREEN GIANT

Helicopter

Search/Rescue

This twin-engined amphibious transport helicopter, based on the US Navy's SH-3A, incorporates important design changes which permit speedier cargo handling and ease of maintenance, with built-in equipment for the removal and replacement of all major components in remote areas. The initial version was the CH-3C. Modified version of the CH-3E evolved for USAF's Aerospace Rescue and Recovery Service, originally to facilitate penetration deep into North Vietnam on rescue missions. Additional equipment includes self-sealing fuel tanks, armor, defensive armament, a rescue hoist, and a retractable in-flight refueling probe. HH-3s are also assigned to ARRS units of the Reserve and ANG.



SIKORSKY CH-53/HH-53

Helicopter

Search/Rescue

The HH-53C is the largest rotary wing aircraft in the Air Force inventory. Improvements in the C model include extra armor plating, more powerful engines, 3 miniguns, removeable external fuel tanks, and air refueling capability from HC-130Ps. With a dash speed of over 200 mph and cruise of 175 mph, the "BUFFs" have replaced the HH-3E in the SAR missions. Under USAF's Pave Low III program, nine HH-53Cs were modified for night and adverse weather operations, with the designation HH-53H. Equipment includes a stabilized FLIR installation mounted below the refueling boom, a B-52 type inertial navigation system, a new Doppler navigation system, and the computer projected map display and radar from the A-7D, with the radar installed in an offset "thimble" fairing on the nose.



SIKORSKY UH-60A BLACK HAWK

Helicopter

Search/Rescue

The Air Force has recently contracted Sikorsky Aircraft to convert two UH-60A Black Hawks to a new combat rescue helicopter, the HH-60D Night Hawk. The HH-60D will greatly enhance Air Force capabilities to conduct aircrew rescue operations deep behind enemy lines, in darkness or bad weather, and at treetop level, avoiding radar detection. Modifications will include rescue hoist, internal and external auxiliary fuel tanks, air-to-air refueling probe, additional avionics bays, and cabin reconfiguration for rescue equipment. In a separate procurement arrangement between the Army and Air Force, 11 Black Hawk helicopters will be produced: two of these aircraft will remain at Sikorsky for the HH-60D prototype development; the remainder will go to USAF units for aircrew training and familiarization. According to Air Force plans, most of the older HH-3 and HH-53 aircraft will be replaced by Night Hawks. First deliveries are expected in mid-1986 with an estimated requirement of 243 aircraft.



McDONNELL DOUGLAS RF-4C
Reconnaissance/Special mission
Low-altitude tactical reconnaissance

Developed to replace the day-only RF-101, the RF-4C is an unarmed multisensor version of the F-4C Phantom II, designed for day/night, poor-weather reconnaissance operations. They are operated by six TAC, USAFE, and PACAF tactical reconnaissance squadrons; and by eight squadrons of the ANG, some of which are nominated as part of the Rapid Deployment Force. The RF-4 was the first tactical aircraft equipped with a forward-looking radar capable of simultaneous terrain-following and low-altitude navigation. The basic aircraft is configured with conventional optical cameras for day operations and an infrared (IR) sensor for night. Both the radar and the camera systems are housed in a modified nose, which increases the length of the aircraft by 33 in comparison with the fighter version.



LOCKHEED SR-71 BLACKBIRD

Reconnaissance/Special Mission

High-altitude strategic reconnaissance

These multisensored supersonic aircraft equip the 9th Strategic Reconnaissance Wing at Beale AFB, California, to support national or strategic requirements, and to support theater commanders in peacetime and during limited conflict. The fastest, highest-flying production aircraft yet built, the SR-71A "Blackbird" carries equipment ranging from single battlefield surveillance systems to systems capable of specialized coverage of up to 100,000 square miles of territory in one hour. In July 1976, flown by three USAF crews, SR-71As set an absolute world speed record of 2,193.167 mph over a 15/25km straight course; a speed of 2,092.294 mph around a 1,000-km closed circuit; and a sustained altitude of 85,069 ft in horizontal flight. The SR-71C is a two-seat training version, with elevated rear cockpit.

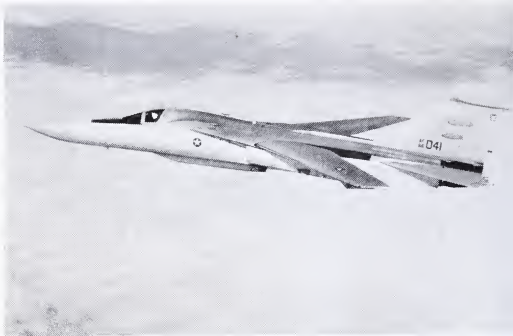


LOCKHEED U-2/TR-1

Reconnaissance/Special mission

Strategic reconnaissance/Tactical surveillance

Production of the basic U-2 began in the late 1950s. It is essentially a powered glider, with high aspect ratio wing and lightweight structure, evolved to carry out clandestine strategic reconnaissance for long periods at very high altitudes over non-allied nations. The TR-1A single-seat tactical reconnaissance version of the U-2R (including two two-seat TR-1Bs for high altitude standoff surveillance missions), will be equipped with electronic sensors to provide continuously available, day or night, all-weather surveillance of the battle area, or potential battle area, in direct support of US and allied ground and air forces during peace, crises, and war situations.



GENERAL DYNAMICS EF-111A
Reconnaissance/Special mission
Tactical jamming

This modification of the basic General Dynamics F-111A airframe incorporates many off-the-shelf components to accomplish its defense suppression mission role. The EF-111A is designed as a replacement for the EB-66 and EB-57, to provide worldwide support of US tactical strike forces, by denying information to the radars that provide data to hostile command and control systems. The prime jammer, the ALQ-99E, is a modification of the Navy ALQ-99, and is carried internally in the EF-111A. Deliveries are now being made to the 366th TFW at Mountain Home AFB, Idaho. A total of 42 EF-111As is planned, to equip two USAF squadrons during the early 1980s, with the last nine modifications sought in the FY '83 budget proposals.

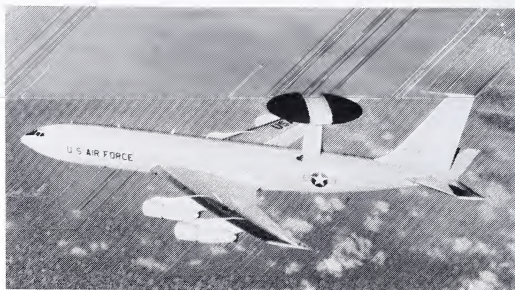


BOEING EC-135/RC-135/WC-135

Reconnaissance/Special mission

Airborne command post/Reconnaissance

Several aircraft in the KC-135 Stratotanker series were modified for specialized missions during production or at a later date. The EC-135C is equipped as a Flying Command Post in support of SAC's airborne alert role, and is fitted with extensive communications equipment. EC-135Cs can be refueled by SAC tankers. Fourteen were built and have been adapted to provide control of Minuteman ICBMs. At least one SAC EC-135C is airborne at all times, accommodating a flight crew of 5, a general officer, and a staff of 18. Versions of the C-135 Stratolifter series used for reconnaissance include turbofan RC-135Vs, equipped also for electronic reconnaissance with SAC; RC-135Ss and RC-135Us. WC-135Bs, converted C-135Bs, are used by MAC for long-range weather reconnaissance missions.



BOEING E-3A SENTRY (AWACS)

Reconnaissance/Special mission

Airborne C³I system

Deliveries of production E-3As began in March 1977, when the first aircraft was handed over to TAC. AWACS was conceived essentially as a mobile, flexible, survivable, and jamming-resistant surveillance and command, control and communications (C³) system, capable of all-weather, long-range, high- or low-level surveillance of all air vehicles, manned or unmanned, above all kinds of terrain. A modified Boeing 707-320B carries an extensive complement of mission avionics, including computer, radar, IFF, communications, display, and navigation systems. The unique capability of AWACS is provided by its Westinghouse Electronic Corporation look-down radar, which makes possible all-altitude surveillance over land or water, thus correcting a serious deficiency in earlier surveillance systems.



BOEING E-4 (NEACP/AABNCP)

Reconnaissance/Special mission

Airborne command post

SAC is the Air Force single resource manager for the E-4 airborne command post aircraft, the main operating base for which is Offutt AFB, Nebraska. Three E-4As, modified Boeing 747 aircraft, were built initially to support the National Emergency Airborne Command Post (NEACP), and provided an interim capability by utilizing existing EC-135 command control and communications (C³) equipment. The E-4B, the Advanced Airborne Command Post, has been under development for several years, and will eventually support both the NEACP and SAC airborne command post missions. It is equipped for inflight refueling and contains a wide variety of new communications equipment. Two additional E-4Bs are planned, completing the required total of six aircraft.



LOCKHEED T-33A

Trainer

Combat support/Radar target evaluation training

Although derived from the Shooting Star jet fighter, which flew for the first time nearly forty years ago, about 200 T-33As remain in service for use in combat support missions and for proficiency and radar target evaluation training. A lengthened fuselage accommodates a second cockpit in tandem, with the canopy extended to cover both. Combat armament is replaced by an all-weather "navigational nose."

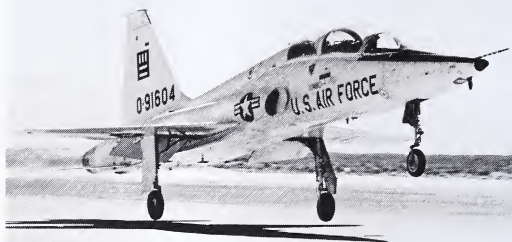


CESSNA T-37B

Trainer

Primary flight training

As Air Training Command's standard two-seat primary trainer, the T-37B was used also by ATC, in cooperation with SAC, to implement the Accelerated Copilot Enrichment (ACE) program which provides increased flying experience in T-37s and T-38s for SAC junior pilots. The original T-37A was the first USAF jet trainer designed as such from the start. From November 1959, deliveries switched to the T-37B, and all A models were subsequently converted to B standard. Well over a thousand T-37s were built, and versions are used by many foreign countries for their pilot training programs, as well as for military surveillance and low-level attack duties.



NORTHROP T-38 Talon

Trainer

Advanced flight training

This lightweight twin-jet advanced trainer, which was in continuous production from 1956 to 1972, is almost identical in structure to the F-5 tactical fighter. The first T-38 flew in April 1959, and production models entered operational service in March 1961. More than 1,100 of the total 1,187 T-38s built were delivered to USAF and about 900 remain in service throughout the Air Force. Most are used by ATC; others fly with the 479th Tactical Training Wing at Holloman AFB, New Mexico and have flown with the Thunderbirds Air Demonstration Squadron.



ROCKWELL INTERNATIONAL CT-39 SABRELINER

Trainer

Operational support/Combat-readiness training

To meet USAF requirements for a combat-readiness trainer and operational support aircraft, Rockwell built as a private venture the prototype Sabreliner, which made its first flight in September 1958, powered by two General Electric J85 turbojets. Subsequent production models utilized by USAF are CT-39A/B basic utility and training aircraft with J60 turbojet engines, of which 143 were delivered for service throughout the Air Force. Of those still in the inventory, 113 are assigned to MAC for airlift support, and are stationed at 15 CONUS bases and two overseas locations. Sabreliners are also in service with PACAF and AFSC, and with AFCC facility checking squadrons which use two Sabreliners, together with four C-140As, to evaluate communications and navigation aids at Air Force bases.



CESSNA T-41 MESCALERO

Trainer

Preliminary flight training

Acquired by USAF as a trainer under the designation T-41A, the standard Cessna Model 172 light aircraft is used in a preliminary flight screening program of about 14 hours for USAF pilot candidates. An initial order for 170 aircraft in 1964 was supplemented by a further 34 in July 1967. Forty-five more-powerful T-41Cs, based on the Cessna Model R172E, were delivered for cadet flight training at the USAF Academy.



BOEING T-43A

Trainer

Navigation training

Derived from the commercial Boeing Model 737-200, the T-43A navigation trainer made its first flight in April 1973. It was developed as a replacement for the piston-engined T-29, and is equipped with the same on-board avionics as the most advanced USAF operational aircraft, including celestial, radar, and inertial navigation systems, LORAN, and other radio systems. Deliveries of the 19 aircraft ordered for ATC were completed in July 1974 and 15 remain in the ATC inventory; the other 4 are assigned to the ANG.



LOCKHEED C-5 GALAXY
Transport/Tanker
Strategic airlift

Designed to carry heavy and bulky cargo for long distances, the C-5 is the largest aircraft in the world. Although resembling the C-141 in external design, the C-5 is a different aircraft internally. The C-5 has 28 wheels in its landing system to allow landing on semi-prepared runways. Above the cargo deck is a permanent passenger section with a 75 seat capacity. Although primarily designed for cargo, seating for 270 troops is possible on the cargo deck. Typical loads for the C-5 are 2 M-60 tanks, 10 Pershing missiles with vehicles, or 36 pallets as compared to the C-141s 10 pallets. The C-5 also is equipped for parachute delivery of cargo and troops and has dropped up to 70,000 pounds on a single pass.



DEHAVILLAND C-7A CARIBOU

Transport/Tanker

Tactical transport

Several of these Canadian-built all-weather STOL utility transports, taken over from the US Army in January 1967, continue in service with AF Reserve's 94th Tactical Airlift Wing, but those that were operated by the ANG have been withdrawn from use.



McDONNELL DOUGLAS C-9A/VC-9C NIGHTINGALE

Transport/Tanker

Aeromedical airlift/VIP transport

Based on the DC-9 Srs 30 commercial airliner, the C-9A is an aeromedical airlift transport, in service since August 1968. Modifications include a special-care compartment with separate atmospheric and ventilation controls. Delivery of 21 to MAC's 375th Aeromedical Airlift Wing was completed by February 1973. The Nightingale is also performing overseas theater aeromedical evaluation missions in Europe, and was used to bring the US hostages back to Europe, from Algeria, on their return from Iran. Three specially configured VC-9Cs were delivered to the 89th Military Airlift Wing at Andrews AFB, Maryland in 1975 for Presidential and other US governmental duties.



BEECH C-12A
Transport/Tanker
Operational support airlift

Thirty military versions of the Beechcraft Super King Air 200 were delivered to USAF under the designation C-12A. Their role is to support attaché and military assistance advisory missions throughout the world. MAC uses two C-12As to train aircrews and to supplement support airlift.



DEHAVILLAND UV-18B TWIN OTTER
Transport/Tanker
Jump platform

The Air Force Academy Parachute Team and AM-490 students jump from the DeHavilland UV-18B Twin Otter. The Academy is the first Air Force organization to fly this high wing, fixed landing gear, twin engine aircraft. The UV-18B carries 18 people—15 jumpers, a jumpmaster, and two pilots.



FAIRCHILD C-123 PROVIDER

Transport/Tanker

Tactical transport

In service with Air Force Reserve squadrons, as a part of USAF's tactical airlift capacity, the C-123K is the only version of the basic C-123 troop and supply transport still in the USAF inventory. The 16 in current use will be retired in FY '83.



LOCKHEED C-130 HERCULES

Transport/Tanker

Tactical airlift

The primary tactical airlift aircraft, the Hercules has been produced in over 15 versions. Currently the E is the primary version with its uprated engines and underwing fuel tanks. The HC-130P is used in air-sea rescue and is equipped for recovery of individuals with the Fulton recovery system. It is also able to refuel HH-3s and HH-53s in flight with a drogue system. The DC-130 is equipped to launch and control four drones for air reconnaissance for high threat areas. The WC-130 flies weather missions such as hurricane hunting and cloud seeding. The LC-130OR is fitted with wheelskis and JATO bottles for missions into the polar regions. The Hercules is designed for palletized cargo and is capable of air delivering these pallets by parachute or low-level extraction system.



BOEING VC-137

Transport/Tanker

Presidential/VIP transport

Five specially modified Boeing 707 transports are operated by MAC's 89th Military Airlift Wing from Andrews AFB, Maryland, for VIP duties. Best known is "Air Force One," a VC-137C for use by the President. It is basically a 707-320B with a special VIP interior. A second VC-137C is also operated, together with three small 707-120s, originally designated VC-137As but later modified to VC-137B standard by the installation of turbofan engines.



LOCKHEED C-140 JETSTAR

Transport/Tanker

Evaluation/Operational support airlift

Deliveries of the C-140 JetStar began in late 1961. Four C-140As are used currently by Air Force Communications Command (AFCC) to evaluate landing systems, navigational aids, radar approach control equipment, and controllers and tower operations. Six C-140B transport versions are in service with the 89th Military Airlift Wing of MAC, operational support airlift.



LOCKHEED C-141B STARLIFTER

Transport/Tanker

Strategic airlift

Initiated as the flying element of Logistics Support System 463L, with an all-weather landing system standard, the C-141A began squadron operations with MAC in April 1965. It was soon making virtually daily flights to Southeast Asia, and played a key role in the civilian evacuation program in both South Vietnam and Cambodia. Lockheed built 285, of which some were modified to carry Minuteman ICBMs, with local structural strengthening to accommodate this 86,207 lb load. In service, loads were often space-limited; so, to utilize more fully the potential of its C-141s, USAF funded modification of the entire current force of 270 aircraft to C-141B standard, with the fuselage lengthened by 23 ft 4 in, and with added in-flight refueling capability.



BOEING KC-135 STRATOTANKER

Transport/Tanker Air refueling

Developed from the Boeing 707, the KC-135 is used by SAC to support its own force and those of other commands with aerial refueling for all tactical, strategic, and cargo aircraft. With high speed and high altitude capabilities, the KC-135 can also be used as a long-range passenger and/or cargo transport, although the C-135 Stratolifter, essentially the same aircraft without the refueling capabilities, is better equipped to handle that mission. Additionally, the EC-135 and RC-135 are used as an Airborne Command Post (ABNCP) and for reconnaissance, respectively.

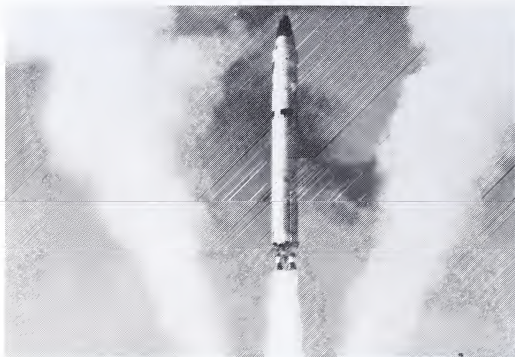


McDONNELL DOUGLAS KC-10A EXTENDER

Transport/Tanker

Air refueling/Strategic airlift

The KC-10A is based on an advanced version of the commercial DC-10, modified to include body bladder fuel cells in the lower cargo compartments, a boom operator's station, an aerial refueling boom, a hose and drogue refueling system, and military avionics. In its primary role of increasing US air mobility, a single KC-10A will be able to combine the tasks of a tanker and a cargo aircraft by refueling fighters and simultaneously carrying the fighter's support equipment and personnel on overseas missions.



MARTIN MARIETTA LGM-25C TITAN II ICBM

Missile system

Intercontinental ballistic missile

The heavyweight of the U.S. strategic missile force is the Titan II, which carries the largest nuclear warhead in the U.S. ICBM Inventory. The Titan is a 2-stage missile which uses storable liquid propellants and is capable of destroying enemy targets more than 6,000 nautical miles away. Fifty-two Titan IIs have been deployed since 1963 at three operational bases — in Arizona, Arkansas, and Kansas. For maximum survivability and effectiveness, individual launch complexes are separated by a distance of 7 to 10 miles. All incommision missiles are maintained in a constant alert condition, with less than one minute reaction time from key-turn to liftoff.



BOEING LGM-30F/G MINUTEMAN II/III ICBM

Missile system

Intercontinental ballistic missile

This three-stage, solid-propellant, second-generation ICBM, though of similar range, is smaller and lighter than the liquid-propellant Titan and has a smaller payload. The operational missiles are housed in underground silos, for which an upgrade program was completed in 1980 to provide increased launch facility protection. The current versions are: LGM-30F Minuteman II: similar in configuration to the original Minuteman I, Minuteman II has increased range and targeting coverage; also increased accuracy and payload capacity. LGM-30G Minuteman III: MIRV capability enables this version to place warheads on three targets with a high degree of accuracy; Minuteman III also increases the possibility of penetrating enemy defense systems. The Minuteman force is made up of 450 Minuteman IIs and 550 Minuteman IIIs.



BOEING MX PEACE KEEPER ICBM

Missile system

Intercontinental ballistic missile

Due to the increasing vulnerability of SAC's land-based ICBMs, a new missile system, Missile X or MX, is being developed. It is designed as a follow-on to the Minuteman III, with full-scale deployment expected by 1986. MX has twice the gross weight of the Minuteman III and four times its throw-weight. The missile will have increased range and improved accuracy over current systems, with each missile carrying up to 10 warheads. Although Congress fully supports the speedy deployment of the MX missile, it has stipulated that any interim measure must be compatible with a permanent basing solution. Possible permanent options include some form of ballistic missile defense for existing silos, deception, a system of multiple protective shelters (MPSs), or putting the MX on a new aircraft.



BOEING AGM-69 SRAM

Missile system

Short-range attack missile

The Short Range Attack Missile, deployment of which began in 1972, is an inertially guided, supersonic air-to-surface weapon carried on board SAC's B-52 and FB-111 aircraft. The SRAM carries a nuclear warhead and was designed fundamentally to attack and neutralize enemy terminal defenses, such as SAM sites, although it is capable of destroying any target. At the present time there is no known defense against the SRAM.



BOEING AGM-86B ALCM

Missile system

Air-launched cruise missile

The Air-Launched Cruise Missile (ALCM) is a small unmanned winged air vehicle capable of sustained subsonic flight following launch from a carrier aircraft. It has a turbofan engine and carries a nuclear warhead, and is programmed for precision attack on surface targets. Guidance is by a combination of inertial and terrain comparison techniques. Small radar signature and low-level flight capability enhance its effectiveness. When launched in large numbers, each of the missiles would have to be countered, making defense against them both costly and complicated. Additionally, by diluting defenses, the ability of manned aircraft to penetrate to major targets would be greatly improved. A B-52 could carry 12 ALCMs externally (6 mounted under each wing) and 8 internally on a rotary launcher, with the missiles' wings and tail folded, and engine air intake retracted.

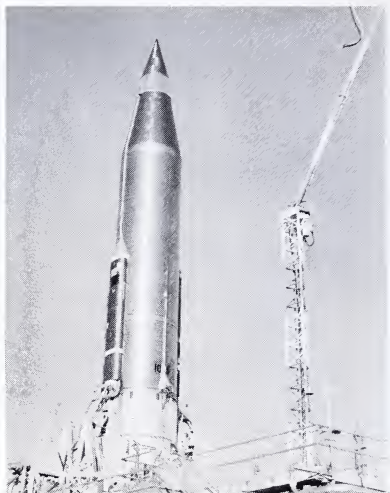


GENERAL DYNAMICS BGM-109G GLCM

Missile system

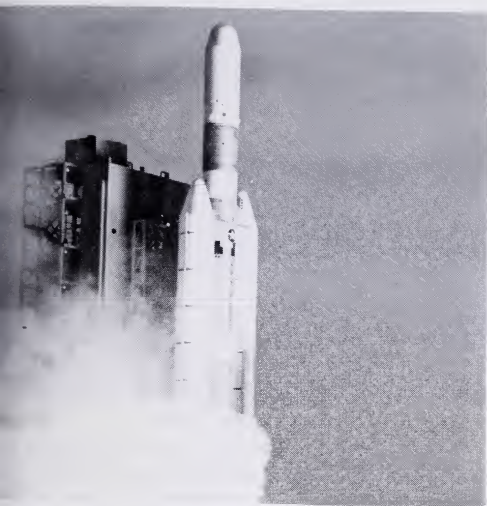
Ground-launched cruise missile

The Ground Launched Cruise Missile (GLCM), like the ALCM, is a highly accurate, unmanned, winged air vehicle. The GLCM is deployed in groups of four missiles on each Transporter Erector Launcher (TEL) with a basic combat unit consisting of four TELs and two mobile launch control centers. The GLCM is designed to be deployed in Western Europe and Great Britain with the first unit becoming operational in 1983. It has a 2500-kilometer range and carries one nuclear warhead.



ATLAS
Space System
Launch vehicle

The Atlas family of launch vehicles is derived from the General Dynamics/Convair Atlas ICBM. The basic Atlas missile has been mated with various upper stages to form the different booster versions. They include the Atlas-Agena, Atlas-Centaur, and Atlas F. Although their use has recently diminished, they have been one of the primary means of putting military payloads in space.



TITAN III
Space System
Launch vehicle

All of the Titan III vehicles consist of liquid rocket cores, strap-on solid rocket motors, and upper stages. The members of the family include the Titan IIIB, IIIC, III/Centaur, and Titan 34D. Built by Martin Marietta, the Titan III has had over 100 successful launches. This expendable launch vehicle has been the workhorse for military payloads in recent years.

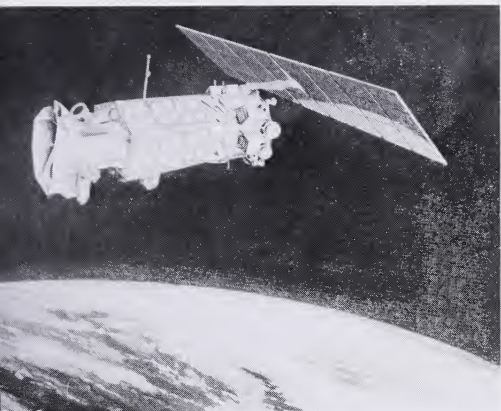


SPACE SHUTTLE ORBITER/STS

Space system

Space transportation

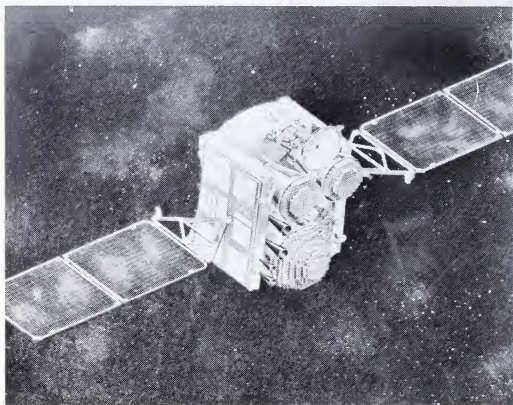
The Space Shuttle is made up of three separate parts: the orbiter, the solid rocket boosters, and the external tank. The Orbiter has a crew of four—a commander, a pilot, and two mission specialists. It is capable of carrying up to 65,000 lb in its 60 ft long, 15 ft diameter payload bay. The solid rocket boosters provide extra thrust during launch, after which they are recovered by parachute for refurbishment and later reuse. The external tank contains the propellants for the orbiter's three main engines. After main engine cutoff, the tank is jettisoned and is destroyed during reentry. The Shuttle is designed to carry payloads to low-earth orbit; thus, satellites intended for high-altitude operation must also use an upper stage.



DMSP

Satellite system

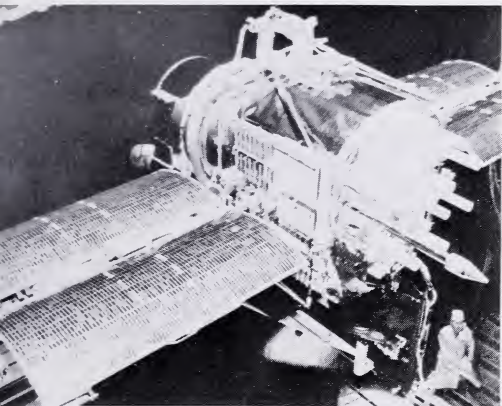
The Defense Meteorological Satellite Program (DMSP) gathers weather data for military use. Two satellites in 450 nautical mile, polar orbits provide telemetry information to ground and shipborne stations for compiling a daily world-wide weather forecast.



DSCS

Satellite system

The Defense Satellite Communications System (DSCS) provides jam-resistant communication for a range of military users including aircraft, ships, and mobile and fixed land based terminals. Four satellites in synchronous, equatorial orbits provide world-wide coverage.



NAVSTAR

Satellite system

The NAVSTAR (Navigation System using Time and Ranging)/Global Positioning System (GPS) is a space based radio navigation system. It will provide 24-hour, all-weather navigation data for U.S. military services world-wide. There will be a total of 18 satellites which are placed in 12 hour, circular orbits by the Space Transportation System.

AERIAL MANEUVERS

AILERON ROLL—an aerial maneuver in which the airplane executes a roll principally by use of the ailerons.

BARREL ROLL—an aerial maneuver in which an airplane makes a complete roll simultaneous with a complete revolution about a line offset but parallel to the longitudinal axis.

CHANDELLE—an abrupt and steep climbing turn made in an airplane, in which the airplane's momentum provides additional acceleration for the climb, i.e. a maximum performance climbing turn with 180 degrees reversal in direction.

GROUND LOOP—a violent turn of an airplane while taxiing or on the takeoff or landing roll.

IMMELMANN (after Max Immelman, 1890-1916, a German flyer)—an aerial maneuver in which an airplane completes the first part of a loop and then rolls over upright, i.e., a half loop with a half roll, thus changing direction by 180 degrees with a simultaneous gain in altitude.

LAZY EIGHT—a kind of eight traced by an airplane in the vertical plane, i.e., eight shaped when viewed from the side and S-shaped when viewed from above or below.

LOOP—an aerial maneuver in which the airplane traces a circular path when viewed from the side and a straight line when viewed from above.

LUFBERY CIRCLE (after Raoul G. Lufbery, 1885-1918)—an aircraft maneuver or formation in which two or more airplanes follow one another in a vertical spiral or in more or less a horizontal circle, in order to protect one another and to be in position to face attacking airplanes.

SPIN—an aerial maneuver in which an airplane makes a vertical descent with its nose pointed sharply or slightly downward while revolving about the line of descent in any of various attitudes.

SPLIT S—an aerial maneuver in which an airplane makes a half roll onto its back and then dives, leveling off on a reversed heading after completing a half loop.

S TURN—an aerial maneuver in which the airplane flies a horizontal path resembling the letter "S". This maneuver is used to teach coordination in use of rudder and aileron controls.

WINGOVER—an aerial stunt in which the airplane is put into a climbing turn until almost stalled, the nose is allowed to fall, followed by a half roll, but returning to normal flight after the ensuing dive in approximately the reverse direction.

HERITAGE OF THE NONCOMMISSIONED OFFICER

by CMSgt William R. Napier, Jr.

The Early Days

Noncommissioned officers have always been the foundation of the flying services. The number of Air Force "firsts" accomplished by NCOs is remarkable.

Noncommissioned officers did their part when the Aeronautical Division was established on August 1, 1907 and later when the Aviation Section of the Signal Corps was created by Congress on June 18, 1914. NCOs were with the Army Air Service, on July 4, 1920 after approval of the Army Reorganization Bill authorizing 1,514 officers and 16,000 enlisted men. This bill also established the new rating "airplane pilot" and authorized flying pay of 50 percent above base pay. NCOs were still doing their part on July 2, 1926 when the Army Air Corps was established, and on June 20, 1941 when it was redesignated the Army Air Forces.

Corporal Edward Ward was the first noncommissioned officer in the Army's balloon organization, which was created in 1892 and later named the Aeronautical Division of the Signal Corps. On July 2, 1907, Corporal Ward was detailed for instruction in balloon manufacture.

Corporal Vernon L. Burge also worked with balloons in the early part of this century, becoming the first enlisted pilot when he graduated from the Army Air School at Fort William McKinley in the Philippines on June 14, 1912.

MSgt Ralph W. Bottriell made history on May 19, 1919 by making the first jump by Army personnel using a manually operated backpack parachute. For this deed, Sgt Bottriell won the Distinguished Flying Cross. This was the earliest

action for which this award was made.

Sergeant Alva Harvey and Sergeant Henry Ogden achieved another "first." They were on the Army team that made the first round-the-world flight in 1924. Sgt Harvey was chosen alternate pilot and mechanic for Major Frederick I. Martín, who led the flight. Sgt Ogden was alternate pilot for Lt Leigh Wade.

In January 1929, SSgt Roy W. Hooe, Sr., was part of the five-man crew who flew the "Question Mark" to a world's endurance record. This achievement tested the practicality of in-flight refueling.

NCO Contributions

The full record of contributions by noncommissioned officers to the Air Force mission would require untold volumes filled with fine print. Instead, we have listed some of those noncommissioned officers who have received special awards, and the Medal of Honor and Air Force Cross. The few mentioned here typify those who have made the Air Force proud of its noncommissioned officers.

Four NCOs and an Airman were among the crew of an Air Force AC-119K gunship, that won the MacKay Trophy in May 1971 for saving their disabled aircraft by successfully returning to their home base. They were cited for "working as a team and displaying the highest degree of airmanship and courage in the face of extreme danger." The crew included TSgt Albert A. Nash; SSgt Adolpho Lopez, Jr.; Sgt Ronald R. Wilson; Sgt Kenneth E. Firestone, and A1C Donnell H. Cofer.

Sgt Edward Marrero won the Veterans of Foreign Wars Armed Forces Award for his "outstanding contribution to national defense" for his actions as an aerial photographer during the night of May 24, 1969.

Sgt Isidro Arroyo, Jr. was awarded the 1969 Cheney Award for heroic actions as a helicopter gunner on February 13, and March 13, 1969. Given for "heroism and selfless devotion to duty," the award demands the same kind of courage from its recipients as does the Medal of Honor. The difference is that actions recognized by the Cheney Award need not be of a military nature nor involve armed conflict with an enemy. The first Cheney Award was presented by President Calvin Coolidge in 1928. Sgt Arroyo was the thirty-sixth recipient of the award, the fifteenth enlisted person.

Enlisted Air Force Cross Winners

The Air Force Cross is our service's second highest military decoration. On July 6, 1960, Congress established the Air Force Cross to parallel the U.S. Army Distinguished Service Cross and the U.S. Navy Cross. Before that date, the Air Force awarded the Distinguished Service Cross. This decoration is awarded to Airmen for extraordinary heroism against an opposing armed force. This section identifies some of the enlisted recipients of the Air Force Cross and describes their heroism.

SSgt Eugene L. Clay's extraordinary heroism involved a helicopter rescue in Southeast Asia on November 9, 1967. As an HH-3E Flight Engineer, Sgt Clay attempted the night extraction of a ground reconnaissance team after his helicopter had been severely damaged. Two other helicopters had been shot down and a third extensively damaged in previous attempts. During the rescue attempt, Sgt Clay exposed himself to hostile fire to assist the survivors. The hostile forces closed in quickly, and as his damaged helicopter departed, it was shot down.

Airman Second Class Duane D. Hackney distinguished himself as a paramedic on an unarmed HH-3E rescue helicopter near Mu Gia Pass, North Vietnam, on February 6, 1967. Airman Hackney flew two sorties to rescue an American pilot downed in a heavily defended hostile area. Despite forces in the vicinity, Airman Hackney volunteered to be lowered into the jungle to search for the survivor. He searched until ordered to evacuate. As his rescue helicopter departed the area, intense 37mm flak tore into the helicopter, causing extensive damage and a raging fire aboard the craft. Disregarding his own safety, Airman Hackney fitted his parachute to the rescued man, choosing to place his responsibility to the survivor above his own life. The courageous paramedic located another parachute for himself and had just slipped his arms through the harness when a second 37mm round struck the crippled aircraft, sending it out of control. The force of the explosion blew Airman Hackney through the open cargo door and, though stunned, he managed to deploy his unbuckled parachute and make a successful landing. He was later recovered by a companion helicopter.

Sergeant Russell M. Hunt was a mechanic on a UH-1F helicopter in Southeast Asia on March 31, 1967. On that date, Sergeant Hunt's aircraft was shot down while evacuating a beleaguered party of American and allied ground forces. Despite painful injuries and continuous hostile fire, Sergeant Hunt rendered aid to increasing numbers of wounded people. When hostile actions forced the ground party to move, Sergeant Hunt helped carry his mortally wounded aircraft commander in an exhausting trek to a designated landing zone. In the landing area, Sergeant

Hunt again exposed himself to hostile fire to give manual landing directions to the recovery helicopters, refusing evacuation until all seriously wounded personnel had been airlifted from the scene.

Sergeant Larry W. Maysey was an HH-3E rescue specialist in Southeast Asia on November 9, 1967 winning his Air Force Cross on the same mission that saw SSgt Clay win his. Sergeant Maysey attempted the night extraction of a ground reconnaissance team after his helicopter had been severely damaged. Two other helicopters had been shot down and a third extensively damaged in previous attempts. During the rescue attempt, Sgt Maysey unhesitatingly exposed himself to the hail of hostile fire to assist wounded survivors into the helicopter.

Airman First Class William H. Pitsenbarger was a rescue and survival specialist aboard a helicopter engaged in the evacuation of American casualties in a dense jungle near Cam My, Republic of Vietnam, on April 11, 1966. With complete disregard for his personal safety, Airman Pitsenbarger voluntarily rode a rescue hoist more than 100-feet to the ground and organized and coordinated rescue efforts at the scene. During the rescue operation, he cared for and prepared the casualties for evacuation, and ensured that the recovery operation continued in a smooth and orderly fashion. Following the recovery of the ninth casualty, the rescue aircraft hovering overhead was damaged and disabled by automatic weapon fire. The helicopter was forced to abandon recovery efforts to make an emergency landing at a nearby airstrip. Airman Pitsenbarger volunteered to remain on the ground and administer medical treatment to the wounded. Shortly after rescue efforts were interrupted, the

area came under heavy sniper and mortar fire. Airman Pitsenbarger repeatedly exposed himself to intensive automatic fire while gathering rifles and ammunition from fallen comrades which he passed among the defenders. His bravery and determination in the face of overwhelming odds are in keeping with the highest standards of performance and traditions of the American fighting man under attack. . .

Enlisted Medal of Honor Winners.

The Medal of Honor is a U.S. military decoration awarded a person who, while in the armed services of the United States, distinguishes him or herself conspicuously by gallantry and intrepidity at the risk of life above and beyond the call of duty. It is the highest U.S. decoration. Recommendation for it must incontestably prove that the bravery or self sacrifice involved conspicuous risk of life, and that had such risk not been taken there would be no just grounds for censure. The award is made in the name of Congress and is usually presented by the President. Originally authorized by Congress in 1861, it is sometimes called the "Congressional Medal of Honor."

While flying as aircrew members, five Air Force noncommissioned officers have won the Medal of Honor. Four of them served in World War II and the fifth in the Vietnam War.

Sgt Maynard H. Smith won his Medal of Honor for action over enemy-occupied Europe on May 1, 1943. When the aircraft on which he was a gunner was hit by enemy fire and set ablaze, Sergeant Smith threw exploding ammunition overboard, manned workable guns until German fighters were driven off, administered first aid to a wounded comrade, and wrapping himself in protecting cloth, completely extinguished the fire by hand.

Sgt Archibald Mathies earned the Medal of Honor while on duty over occupied Europe with the Eighth Air Force on February 20, 1944. When the aircraft on which he was serving as engineer was severely damaged, the copilot killed, and the pilot wounded, Sgt Mathies managed to fly the plane with the aid of a navigator. They attempted to land the plane in order to save the life of the pilot. On the third attempt at landing, the plane crashed and all three men were killed.

TSgt Forrest L. Vosler took heroic action that won him the Medal of Honor while flying over Bremen, Germany, on December 20, 1943. When the aircraft in which he was serving as radio operator and gunner was severely damaged by anti-aircraft fire and he was painfully wounded in the legs, thighs, and face, Sgt Vosler asked to be thrown out of the aircraft to lighten the plane. He managed to operate the radio and send out distress signals and then saved the wounded tail gunner when the plane was ditched.

SSgt Henry E. Erwin was the only enlisted member of the Air Force to win the Medal of Honor in the Pacific Theater during World War II. Sergeant Erwin won the Medal of Honor for action over Koriyama, Japan, on April 12, 1945. As he was launching the phosphorus bombs which were used as signals to inform the bombing group, one proved faulty and exploded inside the B-29 aircraft. Realizing that the aircraft and crew would be lost if the burning bomb remained in the plane, and disregarding severe burning of his hands, Sgt Erwin carried the bomb to the copilot's window and threw it out.

Sgt John L. Levitow became the lowest-ranking Airman in history to win the Medal of Honor when the aircraft on which he was serving as loadmaster was severely damaged by

82mm mortar fire over Long Binh, Republic of Vietnam, on February 24, 1969. Suffering from more than 40 shrapnel wounds in the back and legs, Sgt Levitow observed a magnesium flare, thrown by the mortar blast, amid a jumble of spilled ammunition cannisters. In spite of loss of blood and partial loss of feeling in his right leg, Sergeant Levitow threw himself on the deadly device, hugged it close, and dragged himself to the cargo door where he hurled the flare through the open door. The flare ignited in the air in almost the same instant. His selfless act saved the aircraft and crew from almost certain death and destruction.

These acts of heroism underscore the role of noncommissioned officers and enlisted men and women as the foundation of the flying services. The NCO corps has a long, proud tradition and is a dynamic part of the "real world" U.S. Air Force.

Perhaps the most significant step toward establishing the prestige of noncommissioned officers and calling attention to their responsibility was the creation of the position of Chief Master Sergeant of the Air Force (CMSAF). The CMSAF acts as the personal advisor to the Air Force Chief of Staff on matters concerning the welfare, effective use, and progress of the enlisted corps. The role as the Senior Enlisted Airman is but one example of the increasing recognition of the abilities of today's noncommissioned officers.

This is the heritage of the Air Force. The heritage of men like Rickenbacker, Mitchell, Lindbergh, Bong, Jabara, McConnell, Ritchie, Sijan, Bottriel, Smith and Levitow. This is the heritage of all those who served and pioneered in aviation, who lived and died in the Air Force. This is the heritage of all those who wear the Air Force Blue. This is now YOUR heritage.

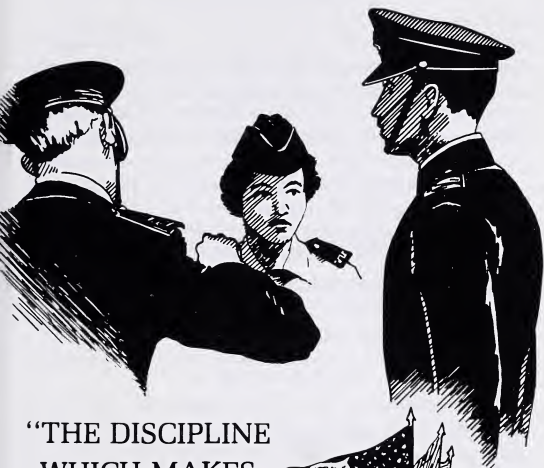
SECRETARIES OF THE AIR FORCE

W. Stuart Symington	18 Sep 47-24 Apr 50
Thomas K. Finletter	24 Apr 50-20 Jan 53
Harold Talbott	4 Feb 53-13 Aug 55
Donald A. Quarles	15 Aug 55-30 Apr 57
James H. Douglas, Jr.	1 May 57-11 Dec 59
Dudley C. Sharp	11 Dec 59-20 Jan 61
Eugene M. Zuckert	24 Jan 61-30 Sep 65
Harold Brown	1 Oct 65-15 Feb 69
Robert C. Seamans, Jr	16 Feb 69- Jun 73
John L. McLucus	14 Jul 73-13 Nov 75
Thomas C. Reed	8 Dec 75- Apr 77
John C. Stetson	Apr 77- May 79
Dr. Hans M. Mark	26 Jul 79-20 Jun 80
Verne Orr	20 Jan 80-

CHIEFS OF STAFF, U.S. AIR FORCE

General Carl Spaatz, USAF	26 Sep 47-29 Apr 48
General Hoyt S. Vandenberg, USAF	30 Apr 48-29 Jun 53
General Nathan F. Twining, USAF	30 Jun 53-30 Jun 57
General Thomas D. White, USAF	1 Jun 57-30 Jun 61
General Curtis E. LeMay, USAF	30 Jun 61-31 Jan 65
General John P. McConnell, USAF	1 Feb 65-31 Jul 69
General John D. Ryan, USAF	1 Aug 69-31 Jul 73
General George S. Brown, USAF	1 Aug 73-2 Jul 74
General David C. Jones, USAF	3 Jul 74-1 Jul 78
General Lew Allen, Jr., USAF	1 Jul 78-30 Jun 82
General Charles A. Gabriel, USAF	20 Jun 82-

FOURTH CLASS KNOWLEDGE



“THE DISCIPLINE
WHICH MAKES
THE SOLDIERS...”



OATH OF ALLEGIANCE TO THE UNITED STATES

I, _____ having been appointed an Air Force Cadet in the United States Air Force, do solemnly swear (or affirm) that I will support and defend the Constitution of the United States against all enemies, foreign and domestic, that I will bear true faith and allegiance to the same; that I take this obligation freely, without any mental reservation or purpose of evasion, and that I will well and faithfully discharge the duties of the office on which I am about to enter. SO HELP ME GOD.

MISSION OF THE UNITED STATES AIR FORCE

The mission of the United States Air Force is to organize, train, and equip air forces for the conduct of prompt and sustained combat operations in the air.

MISSION OF THE UNITED STATES AIR FORCE ACADEMY

To provide instruction and experience to all cadets so that they graduate with the knowledge and character essential to leadership and the motivation to become career officers in the United States Air Force.

THE PURPOSE OF THE FOURTH CLASS SYSTEM

The purpose of the Fourth Class System at the United States Air Force Academy is to lay the foundation early in the cadet's career for the development of those qualities of character and discipline which will be expected of an officer. These qualities must be so deeply instilled in the individual's personality that no stress or strain will erase them.

ALTIMETER CHECK

"Sir, my altitude is 7,250 feet above sea level—far, far above that of West Point or Annapolis."

QUOTATIONS

"Duty then is the sublimest word in the English language. You should do your duty in all things. You can never do more. You should never wish to do less."
(General Robert E. Lee.)

"Never tell people how to do things. Tell them what to do and they will surprise you with their ingenuity."
(General George S. Patton, Jr., War as I Knew It.)

"If I do my full duty, the rest will take care of itself."
(General George S. Patton, Jr.)

“If you can’t get them to salute when they should salute and wear the clothes you tell them to wear, how are you going to get them to die for their country?” (General George S. Patton, Jr.)

“The discipline which makes the soldiers of a free country reliable in battle is not to be gained by harsh or tyrannical treatment. On the contrary, such treatment is far more likely to destroy than to make an army. It is possible to impart instruction and give commands in such a manner and such a tone of voice as to inspire in the soldier no feeling but an intense desire to obey, while the opposite manner and tone of voice cannot fail to excite strong resentment and a desire to disobey. The one mode or the other of dealing with subordinates springs from a corresponding spirit in the breast of the commander. He who feels the respect which is due to others cannot fail to inspire in them respect for himself while he who feels, and hence manifests disrespect toward others, especially his subordinates, cannot fail to inspire hatred against himself.” (Major General John M. Scholfield’s graduation address to the graduating class of 1879 at West Point.)

“When there is a visible enemy to fight in open combat . . . many serve, all applaud and the tide of patriotism runs high. But when there is a long, slow struggle with no immediate, visible foe, your choice will seem hard indeed.” (President John F. Kennedy, Address to the Graduating Class, U.S. Naval Academy, June 1961.)

“Ask not what your country can do for you—ask what you can do for your country.” (John F. Kennedy.)

“On the fields of friendly strife are sown the seeds that on other days and other fields will bear the fruits of victory.” (General Douglas MacArthur.)

“Victory smiles upon those who anticipate the changes in the character of war, not upon those who wait to adapt themselves after the changes occur.” (Italian Air Marshall Giulio Douhet, 1928.)

“In the development of air power, one has to look ahead and not backward and figure out what is going to happen, not too much of what has happened.” (Brigadier General William “Billy” Mitchell; *Winged Defense*, 1924.)

“It is probable that future war will be conducted by a special class, the Air Force, as it was by the armored knights of the Middle Ages.” (Brigadier General William “Billy” Mitchell; *Winged Defense*, 1924.)

“Never in the field of human conflict was so much owed by so many to so few.” (Sir Winston Churchill, after the Battle of Britain.)

“You may have to fight when there is no hope of victory, because it is better to perish than live as slaves.” (Sir Winston Churchill.)

“Example is the best general order.” (General George Crook.)

“Be an example to your men, in your duty and in private life. Never spare yourself, and let the troops see that you don’t in your endurance of fatigue and privation. Always be tactful and well mannered and teach your subordinates to be the same. Avoid excessive sharpness or harshness of voice, which usually indicates the man who has shortcomings of his own to hide.” (Field Marshall Erwin Rommel.)

The general is sorry to be informed that the foolish and wicked practice of profane cursing and swearing (a vice heretofore little known in an American army) is growing into fashion; he hopes that the officers will by example as well as influence, endeavor to check it, and that both they and the men will reflect that we can have little hope of blessing of heaven on our arms if we continue to insult it by our impiety and folly. Added to this, it is a vice so mean and low that every man of sense and character detests and despises it.” (General George Washington: General Order to the Continental Army, 3 August 1776.)

“No man is fit to command another that cannot command himself.” (William Penn.)

“If I can’t go back with my self-respect, I won’t go back at all.” (Captain Theodore Harris, USAF, in solitary confinement for 14 months as a Prisoner of War in Korea.)

“There is no limit to the goal you can do if you don’t care who gets the credit.” (General George C. Marshall.)

“A leader is a man who has the ability to get other people to do what they don’t want to do, and like it.” (President Harry S. Truman; Memoirs, 1955.)

“I don’t mind being called tough, since I find in this racket it’s the tough guys who lead the survivors.” (Colonel Curtis LeMay, USA, to Lieutenant General Ira Eaker, USA, in England, 1943.)

“There is no type of human endeavor where it is so important that the leader understands all phases of his job as that of the profession of arms.” (Major General James C. Fry.)

“Man’s flight through life is sustained by the power of his knowledge.” (Inscription on the Eagle and The Fledglings by Austin “Dusty” Miller, HQ ATC.)

“War is an ugly thing, but not the ugliest of things. The decayed and degraded state of moral and patriotic feeling which thinks that nothing is worth war is much worse. The person who has nothing for which he is willing to fight, nothing which is more important than his own personal safety, is a miserable creature and has no chance of being free unless made and kept so by the exertions of better men than himself.” (John Stewart Mill.)

PHONETIC ALPHABET

A – Alpha

B – Bravo

C – Charlie

D – Delta

E – Echo

F – Foxtrot

G – Golf

H – Hotel

I – India

J – Juliet

K – Kilo

L – Lima

M – Mike

N – November

O – Oscar

P – Papa

Q – Quebec (Kay-beck)

R – Romeo

S – Sierra

T – Tango

U – Uniform

V – Victor

W – Whiskey

X – X-Ray

Y – Yankee

Z – Zulu

UNIT AWARDS

Outstanding Squadron

The Air Force Association Trophy

Outstanding Group

The Association of Graduates

Intramural Athletics

The First Lieutenant John J. Malanaphy
Trophy

Drill

The Ambassador Lawrence A. Steinhardt
Trophy

Outstanding Summer Squadron

81st Fighter Wing Memorial Trophy

Intercollegiate Athletics

Gillen-Slezak Memorial Trophy

Academic Achievement

Air Training Command Trophy

Military Proficiency

Air Defense Command Trophy

THE AMERICAN FIGHTING MAN'S CODE OF CONDUCT

I

I am an American Fighting man. I serve in the forces which guard my country and our way of life. I am prepared to give my life in their defense.

II

I will never surrender of my own free will. If in command, I will never surrender my men while they still have the means to resist.

III

If I am captured, I will continue to resist by all means available. I will make every effort to escape and aid others to escape. I will accept neither parole nor special favors from the enemy.

IV

If I become a prisoner of war, I will keep faith with my fellow prisoners. I will give no information nor take part in any action which might be harmful to my comrades. If I am senior I will take command. If not I will obey the lawful orders of those appointed over me and will back them up in every way.

V

When questioned, should I become a prisoner of war, I am required to give name, rank, service number, and date of birth. I will evade answering further questions to the utmost of my ability, I will make no oral or written statements disloyal to my country and its allies or harmful to their cause.

VI

I will never forget that I am an American fighting man, responsible for my actions, and dedicated to the principles which made my country free. I will trust in my God and in the United States of America.



“Forget Me Not” by Keith Ferris

AIR FORCE DAYS

January 31, 1958—Explorer I, the first US satellite to go into orbit, was launched from Cape Canaveral by a Jupiter C booster. It discovered the inner Van Allen Radiation Belt.

March 26, 1926—Dr. Robert H. Goddard launched the first liquid fueled rocket in history. It flew 184 feet, and started the age of Modern Rocketry.

April 12, 1981—The first Space Shuttle Orbiter, OV-102 Columbia, manned by John Young (commander) and Robert Crippen (pilot) was successfully launched by NASA from Cape Canaveral.

April 18, 1942—Led by Lt Colonel James H. Doolittle, 16 B-25s took off from the carrier *Hornet* in the first raid on Tokyo. Although all 16 planes were lost, 14 crews came through alive. Lt Colonel Doolittle was awarded the Medal of Honor, and the other flyers received the Distinguished Flying Cross.

May 5, 1961—Commander Alan B. Sheppard, Jr., USN, became the first US astronaut to enter space. His Project Mercury capsule, "Freedom 7," was boosted from Cape Canaveral, Florida, by a Mercury Redstone (MR-3) rocket to a height of 115 miles. The flight lasted 14.8 minutes, traveled 302 miles, and reached a maximum speed of 5,000 mph.

May 12, 1949—The Soviet blockade of Berlin was lifted, bringing to a close the Berlin Airlift and signifying a great moral victory for the Western Powers. During the 462 days of “Operation Vittles” that preceded the end of the airlift on September 30, 1949, US planes had officially carried 1,783,826 tons of supplies in 277,262 flights. The airlift demonstrated the importance of airpower as an instrument of national policy.

June 3-7, 1965—During the 4-day flight of the Gemini 4 capsule, Major Edward H. White, USAF, became the first American to walk in space. With Major James A. McDivitt, USAF, as commander, Astronaut White spent 22 minutes outside the capsule connected to it by a 25-foot tether and oxygen cord.

July 20, 1969—Fulfilling President Kennedy’s statement of national objective, the US landed the first manned space vehicle on the moon at 4:17:41 (EDT). The Lunar Module, named Eagle, carried NASA Commander Neil A. Armstrong and LM pilot Colonel Edwin E. Aldrin, Jr., USAF, to the surface while Lt Colonel Michael Collins, USAF, orbited in the Command and Service Module, named Columbia. At 10:56:20 (EDT) Astronaut Armstrong became the first man to step on the moon.

July 26, 1947—The National Security Act became law. The law provided for the establishment of the third military department, the Air Force, and the National Military Establishment, headed by a civilian Secretary of Defense, for unified direction of the Services.

August 6, 1945—The first atomic bomb was dropped on Hiroshima, Japan. The bomb, nicknamed “Little Boy,” was delivered by the B-29 “Enola Gay,” under the command of Lt Colonel Paul W. Tibbits, Jr.

September 18, 1947—The initiation of Executive Order 9877 defined the roles and mission of the Air Force. Although the National Security Act was passed on July 16, its effective date was September 18 when W. Stuart Symington was sworn in as the first Secretary of the Air Force. On September 26, General Carl A. Spaatz was sworn in as the first Air Force Chief of Staff.

September 28, 1924—Completion of the first around-the-world flight in aviation history. Four Douglas biplanes, under the command of Major Frederick L. Martin, left on the 26,350-mile journey on April 6. After 175 days, 363 hours flying time, two planes returned under command of Lieutenant Lowell H. Smith.

October 1, 1942—The first jet flight by an American aircraft. The plane was the XP-59A built by Bell Aircraft Corporation with two General Electric I-1A turbojets mounted beneath the wings close to the fuselage. During its first flight of 30 minutes, the plane approached 400 mph.

October 14, 1947—On this date, the Bell X-1 became the first piloted plane to break the speed of sound. It was launched from a B-29. With Captain Charles E. Yeager as pilot, the plane reached a height of 70,140 feet in 2 minutes and 30 seconds of powered flight. Captain Yeager named the plane “Glamorous Glennis” after his wife.

November 8, 1950—First all jet aerial combat in history. Lieutenant Russel J. Brown in an F-80 shot down a Russian MiG-15 over North Korea.

December 17, 1903—The Wright brothers, Orville and Wilbur, made the first sustained, controlled, powered flights from Kill Devil Hill, Kitty Hawk, North Carolina. This fourth and longest flight covered a distance of 852 feet in 59 seconds. Three days earlier, on the 14th they had made the first powered flight lasting 3.5 seconds for a distance of 105 feet.



“Solo Student Over the Numbers” by Keith Ferris

SERVICE SECRETARIES

Secretary of the Air Force

Secretary of the Army

Secretary of the Navy

CHIEFS OF STAFF

**Chairman of the Joint
Chiefs of Staff**

Chief of Staff, USAF

Chief of Staff, USA

**Commandant of the
Marine Corps**

Chief of Naval Operations

AIR FORCE
CHAIN OF COMMAND
President of the United States

Secretary of Defense

Secretary of the Air Force

Chief of Staff, USAF

Superintendent

Commandant of Cadets

Deputy Commandant for the Cadet Wing

Group AOC, Summer

Group AOC, Academic

Squadron AOC, Summer

Squadron AOC, Academic

BASIC CADET TRAINING

First Detail:

Group Commander

Squadron Commander

Operations Officer

Flight Commander

Element Leader

Element NCO

Second Detail:

Group Commander

Squadron Commander

Operations Officer

Flight Commander

Element Leader

Element NCO

ACADEMIC YEAR

First Semester:

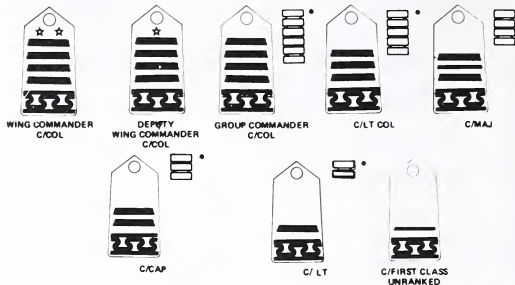
Wing Commander
Group Commander
Squadron Commander
Operations Officer
Flight Commander
Element Leader
Element NCO

Second Semester:

Wing Commander
Group Commander
Squadron Commander
Operations Officer
Flight Commander
Element Leader
Element NCO

CADET RANK/INSIGNIA

1st CLASS



POCKET AND UPPERCLASS CAP INSIGNIA



• SUMMER PROGRAM RANK INSIGNIA

2nd CLASS



WING SGT MAJ
C/MSGT



C/MSGT



GROUP STAFF
C/MSGT



C/MSGT



C/TSGT



C/SECOND CLASS
UNRANKED

3rd CLASS



C/TSGT



WING COLOR GUARD
C/SSGT



C/SSGT

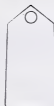


C/THIRD CLASS
UNRANKED

4th CLASS



C/FOURTH CLASS



C/BASIC

UNITED STATES ARMY

PAY
GRADE

ENLISTED

WAR

NAVY

E-1	E-2	E-3	E-4	E-5	E-6	E-7	E-8	E-9	W-1	W-2
										
SEAMAN RECRUIT	SEAMAN APPRENTICE	SEAMAN	PETTY OFFICER THIRD CLASS	PETTY OFFICER SECOND CLASS	PETTY OFFICER FIRST CLASS	CHIEF PETTY OFFICER	SENIOR CHIEF PETTY OFFICER	MASTER CHIEF PETTY OFFICER	GOLD WARRANT OFFICER W-1	GOLD WARRANT OFFICER W-2

MARINES

PRIVATE	PRIVATE FIRST CLASS	LANCE CORPORAL	CORPORAL	SERGEANT	STAFF SERGEANT	GUNNERY SERGEANT	MSGT	MSGT	GOLD WARRANT OFFICER W-1	GOLD WARRANT OFFICER W-2

ARMY

PRIVATE	PRIVATE	PRIVATE FIRST CLASS	CORPORAL	SERGEANT	STAFF SERGEANT	SERGEANT FIRST CLASS	MSGT	SERGEANT MAJOR	GOLD WARRANT OFFICER W-1	GOLD WARRANT OFFICER W-2

AIR FORCE

AIRMAN	AIRMAN	AIRMAN FIRST CLASS	1ST SERGEANT	STAFF SERGEANT	TECHNICAL SERGEANT	MASTER SERGEANT	SENIOR MASTER SERGEANT	CHIEF MASTER SERGEANT	GOLD WARRANT OFFICER W-1	GOLD WARRANT OFFICER W-2

1. MSGT OF THE AIR FORCE WREATH AROUND STAR.
2. ANY RANK WITH A DIAMOND IS A FIRST SERGEANT.

FORCES RANK/INSIGNIA

RANK		COMMISSIONED											
W-3	W-4	O-1	O-2	O-3	O-4	O-5	O-6	O-7	O-8	O-9	O-10		
 WARRANT OFFICER 3	 WARRANT OFFICER 4	 SECOND LIEUTENANT	 FIRST LIEUTENANT	 CAPTAIN	 MAJOR	 LIEUTENANT COLONEL	 COLONEL	 BRIGADIER GENERAL	 MAJOR GENERAL	 LIEUTENANT GENERAL	 GENERAL	 GENERAL OF THE ARMIES	
 WARRANT OFFICER 3	 WARRANT OFFICER 4	 SECOND LIEUTENANT	 FIRST LIEUTENANT	 CAPTAIN	 MAJOR	 LIEUTENANT COLONEL	 COLONEL	 BRIGADIER GENERAL	 MAJOR GENERAL	 LIEUTENANT GENERAL	 GENERAL	 GENERAL OF THE ARMIES	
 WARRANT OFFICER 3	 WARRANT OFFICER 4	 SECOND LIEUTENANT	 FIRST LIEUTENANT	 CAPTAIN	 MAJOR	 LIEUTENANT COLONEL	 COLONEL	 BRIGADIER GENERAL	 MAJOR GENERAL	 LIEUTENANT GENERAL	 GENERAL	 GENERAL OF THE ARMIES	
 WARRANT OFFICER 3	 WARRANT OFFICER 4	 SECOND LIEUTENANT	 FIRST LIEUTENANT	 CAPTAIN	 MAJOR	 LIEUTENANT COLONEL	 COLONEL	 BRIGADIER GENERAL	 MAJOR GENERAL	 LIEUTENANT GENERAL	 GENERAL	 GENERAL OF THE ARMIES	

USAF RATINGS/BADGES

(Mandatory requirements for award of aeronautical ratings)

PILOT: Must be a graduate of USAF UPT or UHT or a graduate of pilot or helicopter training conducted by another military service, provided training is equivalent to USAF UPT or UHT. Must also be physically qualified by Class II Physical Standards.

SENIOR PILOT: Must have at least seven years rated status as a pilot and have a total of at least 2000 total pilot hours or 1300 first pilot or instructor hours.

COMMAND PILOT: Must have at least 15 years rated status as a pilot or senior pilot and 2300 first pilot or instructor pilot hours.

NAVIGATOR: Must be a graduate of USAF UNT or the US Naval Observer Course UT-29 and be physically qualified Class II.

SENIOR NAVIGATOR: Must have at least 7 years rated service as a navigator and 2000 total hours as a navigator/observer.

MASTER NAVIGATOR: Must have at least 15 years rated service as a navigator or senior navigator and at least 3000 total hours as a navigator/observer.

PARACHUTIST BADGE: Must have completed Department of the Army Infantry School, Fort Benning, Georgia, or a formal course taught by the Parachute Branch of the USAF Academy. Senior and Master badges are awarded after numerous jumps, including several jumps performing the duties of a Jumpmaster.



PILOT



**NAVIGATOR OR
AIRCRAFT OBSERVER**



SENIOR PILOT



**SENIOR NAVIGATOR OR
SENIOR AIRCRAFT OBSERVER**



COMMAND PILOT



**MASTER NAVIGATOR OR
MASTER AIRCRAFT OBSERVER**

WEAPONS CONTROLLER BADGE: Identifies officer and enlisted personnel who have completed the USAF Air Weapons Controller School and by virtue of job assignment have a direct role in the management and control of aircraft weapons systems. Senior and Master badges are awarded after 3 years and 7 years service as a weapons controller.

FLIGHT SURGEON: Must be an officer graduate of the Aerospace Medicine Primary Course or a graduate of similar training conducted by another US military service. Senior flight surgeon is awarded after seven years total service and 350 hours logged as a flight surgeon. Chief flight surgeon is awarded after 15 years service and 750 hours logged as a flight surgeon.

FLIGHT NURSE: Must have successfully completed the appropriate course at the USAF School of Aerospace Medicine. Senior flight nurse is awarded after 7 years military service, 5 of those years as a flight nurse, and at least 250 hours of patient time. Chief flight nurse is awarded after 500 hours of patient time and 15 years military service.

NONRATED OFFICER AIRCREW MEMBER: Must be a nonrated officer who is assigned to and performing a designated aircrew duty. Senior and Chief badges are awarded after 7 years service and 60 months as an aircrew member; 15 years service and 120 months as an aircrew member, respectively.

ENLISTED AIRCREW MEMBER: Must be an enlisted personnel assigned to an aircraft operations career field. Senior and Chief badges are awarded the same as nonrated officer badges.



**ENLISTED
AIRCREW MEMBER**



FLIGHT NURSE



**NONRATED OFFICER AIRCREW
MEMBER**



FLIGHT SURGEON



PARACHUTIST



WEAPONS CONTROLLER

SECURITY POLICE QUALIFICATION

BADGE: Identifies Air Force officer or enlisted personnel who have attained the acquired levels of skill and served for a minimum of 6 months in the security police field. Senior and Master badges are awarded after a minimum of 7 and 15 years continuous service, respectively.

AIR TRAFFIC CONTROLLER BADGE: Identifies officer and enlisted personnel who, because of job assignment, special training, and attainment of required skills, have a direct and distinct role in control of air traffic in support of the USAF mission. Senior air traffic controller badge is awarded after seven years practical experience as an air traffic controller, while the Master badge is awarded after 15 years practical experience as an air traffic controller.

JUDGE ADVOCATE INSIGNIA: Identifies officers of the Air Force designated to perform legal functions in accordance with 10 USC 8067(a) for the Air Force and its personnel.

ASTRONAUT DESIGNATOR: This badge embossed on top of any aviation badge of the USAF signifies any personnel who have obtained the altitude of 50 miles or higher in powered flight.

MISSILE BADGE: Must be an officer or enlisted personnel who are qualified as Missile Launch Crew members or for a guided missile duty position, in a guided missile unit.

SENIOR MISSILE BADGE: Must have 3 years active duty served in a guided missile unit performing guided missile duties.

MASTER MISSILE BADGE: Must have 7 years active duty in a guided missile unit performing guided missile duties.



ASTRONAUT DESIGNATOR



**BASIC AIR CONTROLLER
BADGE**



**SECURITY POLICE
QUALIFICATION BADGE**



JUDGE ADVOCATE



MISSILE



SENIOR MISSILE



MASTER MISSILE



MEDAL OF HONOR

UNITED STATES MILITARY DECORATIONS

The MEDAL OF HONOR is the highest award the United States can offer a member of her Armed Forces. It was authorized by an Act of Congress for the Navy in 1861 and the Army in 1862. It is awarded to those individuals who demonstrate exceptional gallantry and courage beyond the call of duty. The act of bravery must have occurred in actual combat against an enemy of the United States and must have involved conspicuous risk of life. The degree of risk must have been such that failure to commit the act would not have resulted in any censure. The MEDAL OF HONOR is awarded by an Act of Congress and is usually presented by the President of the United States.

The AIR FORCE CROSS, NAVY CROSS (USN AND USMC), and DISTINGUISHED SERVICE CROSS (USA) are awarded to United States and foreign military as well as civilian personnel for an act distinguished by heroism in connection with military operations against the enemy. Such heroism must have involved extraordinary risk of life.

DEFENSE DISTINGUISHED SERVICE MEDAL is awarded to any military officer of the Armed Forces of the United States who is assigned to joint staffs and other joint activities of the DOD for exceptionally meritorious service to the United States in a position of unique and great responsibility, while serving with the joint staff or any other joint activities of the DOD.

The DISTINGUISHED SERVICE MEDAL is presented to any person (military, civilian, or foreign) who has distinguished himself by the exceptional exercise of authority or judgment in duties which decide the successful outcome of a major military operation.

The SILVER STAR denotes any individual (military, civilian, or foreign) who exhibits gallantry in action against an enemy of the United States; gallantry being defined as a high degree of heroism.

DEFENSE SUPERIOR SERVICE MEDAL is awarded to any United States Military personnel by the Secretary of Defense who is assigned to a joint staff or other joint activity of the DOD for rendering superior meritorious service in a position of significant responsibility.

The LEGION OF MERIT recognizes exceptionally meritorious conduct in the performance of outstanding service to the United States. The award itself consists of three levels or degrees which are awarded in accordance with the rank of the recipient. It is awarded without degree to members of the armed forces of the United States. To members of foreign armed forces it is awarded in four degrees: Chief Commander, Commander, Officer, and Legionnaire.

The DISTINGUISHED FLYING CROSS is awarded to a member of the armed forces of the United States or to a member of the armed forces of a foreign nation. It is awarded for an act in aerial flight which displays distinctive heroism involving operations that are not routine.

The AIRMAN'S MEDAL, NAVY-USMC MEDAL and SOLDIER'S MEDAL designate members of the armed forces who voluntarily and heroically risk their lives under conditions not involving conflict with an armed enemy.

The BRONZE STAR recognizes persons serving in the armed forces who distinguish themselves by heroism in surface combat against the enemy or by meritorious achievement in connection with military operations against an enemy.

DEFENSE MERITORIOUS SERVICE MEDAL is awarded by the Office of the Secretary of the Air Force, Washington Headquarters Services, Defense Agencies and Headquarters Unified and Specified Commands for noncombat meritorious service or achievement that is incontestably exceptional and of a magnitude that clearly places an individual above his or her peers.

The MERITORIOUS SERVICE MEDAL is awarded to United States military personnel for outstanding noncombat meritorious achievement or service to the United States.

The AIR MEDAL is awarded to United States and foreign military and civilian personnel for meritorious achievement while participating in aerial flight, or for sustained operations against an enemy of the United States.

The JOINT SERVICE, AIR FORCE AND ARMY COMMENDATION MEDALS recognize meritorious achievement or service on the part of a member of the armed forces. These medals are given primarily under peacetime conditions.

The PURPLE HEART is presented to military or civilian citizens of the United States who are wounded or killed in action. The wound must have been received in battle and required medical treatment.

The PRESIDENTAL UNIT CITATION designates units which have displayed great herosim in battle. This award corresponds to the Distinguished Service Cross but on the organizational instead of the individual level.

The AIR FORCE OUTSTANDING UNIT AWARD and the NAVY UNIT COMMENDATION are bestowed in recognition of outstanding unit achievement.

The AIR FORCE ORGANIZATIONAL EXCELLENCE AWARD is awarded to organizations of the United States Armed Forces who have distinguished themselves by exceptionally meritorious achievement or service in support of military operations. It is also awarded when the organization is involved in an event of great national or international significance when not in support of combat operations.

The GOOD CONDUCT MEDAL for all services is given to enlisted personnel for exemplary behavior, efficiency, and fidelity. It is the most widely awarded medal during peacetime.

The bronze OAK LEAF CLUSTER (GOLD STAR, USN-USMC) designates a medal for which a second or subsequent award is made.

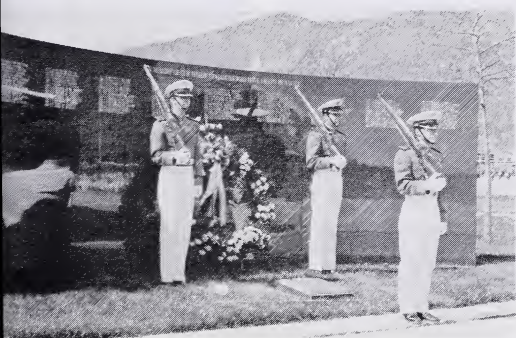
The silver OAK LEAF CLUSTER (SILVER STAR, USN-USMC) is equal to five bronze OAK LEAF CLUSTER.

The bronze SERVICE STAR designates campaign participation credit and additional awards.

The silver SERVICE STAR equals five bronze service stars.

A bronze letter "V" device attached to a ribbon is awarded for valor in combat.

Detailed information on these and all other USAF awards and decorations can be found in AFM 900-3 and AFM 900-48.



UNITED STATES MILITARY DECORATIONS



MEDAL OF HONOR



SILVER STAR



AIRMAN'S MEDAL



AIR MEDAL



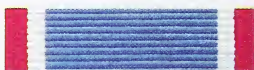
PURPLE HEART



COMBAT READINESS MEDAL



AIR FORCE RECOGNITION RIBBON



AIR FORCE CROSS



DEFENSE SUPERIOR SERVICE MEDAL



BRONZE STAR MEDAL



JOINT SERVICE COMMENDATION MEDAL



PRESIDENTIAL UNIT CITATION



AIR FORCE GOOD CONDUCT MEDAL



AMERICAN DEFENSE SERVICE MEDAL

UNITED STATES MILITARY DECORATIONS



EUROPEAN-AFRICAN-MIDDLE EASTERN CPN MEDAL



NATIONAL DEFENSE SERVICE MEDAL



VIETNAM SERVICE MEDAL



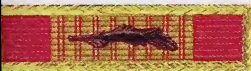
AF LONGEVITY SERVICE AWARD RIBBON



BASIC MILITARY TRAINING HONOR GRADUATE



PHILIPPINE LIBERATION RIBBON



RVN GALLANTRY CROSS W/PALM



WORLD WAR II VICTORY MEDAL



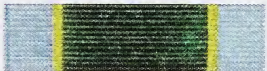
KOREAN SERVICE MEDAL



HUMANITARIAN SERVICE MEDAL



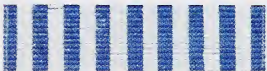
ARMED FORCES RESERVE MEDAL



SMALL ARMS EXPERT MARKSMANSHIP RIBBON



PHILIPPINE INDEPENDENCE RIBBON



UNITED NATIONS SERVICE MEDAL

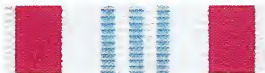
UNITED STATES MILITARY DECORATIONS



DEFENSE DISTINGUISHED SERVICE MEDAL



LEGION OF MERIT



DEFENSE MERITORIOUS SERVICE MEDAL



AIR FORCE COMMENDATION MEDAL



AF OUTSTANDING UNIT AWARD



GOOD CONDUCT MEDAL



AMERICAN CAMPAIGN MEDAL



DISTINGUISHED SERVICE MEDAL (AF)



DISTINGUISHED FLYING CROSS



MERITORIOUS SERVICE MEDAL



AIR FORCE ACHIEVEMENT MEDAL



AF ORGANIZATIONAL EXCELLENCE AWARD



OUTSTANDING AIRMAN OF THE YEAR RIBBON



ASIATIC-PACIFIC CAMPAIGN MEDAL

UNITED STATES MILITARY DECORATIONS



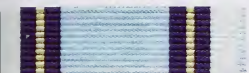
ARMY OF OCCUPATION MEDAL



ANTARCTICA SERVICE MEDAL



AIR FORCE OVERSEAS RIBBON—SHORT



RESERVE FORCES MERITORIOUS SERVICE AWARD



AIR FORCE TRAINING RIBBON



PHILIPPINE PRESIDENTIAL UNIT CITATION



UNITED NATIONS MEDAL



MEDAL FOR HUMANE ACTION



ARMED FORCES EXPEDITIONARY MEDAL



AIR FORCE OVERSEAS RIBBON—LONG



USAF NCO PME GRADUATE RIBBON



PHILIPPINE DEFENSE RIBBON



ROK PRESIDENTIAL UNIT CITATION



REPUBLIC OF VIETNAM CAMPAIGN MEDAL

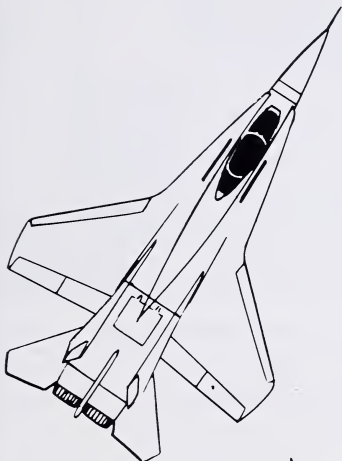
НАДО ВСЕГДА



БЫТЬ НА ЧЕКУ

THE OTHER SIDE: USSR

by Capt Jerome V. Martin



New MiG: Ram L

At the present time the world community recognizes two superpowers. The United States is one and the other is the Union of Soviet Socialist Republics (USSR). Although a number of political and economic factors contribute to gaining this status, for the Soviet Union the major element of its climb into international prominence has been military power. This power is guided and controlled by a political system and philosophy which is quite different than that of the United States. It is imperative that military officers in the United States' military understand both the Soviet political outlook and the military concepts and forces which support their political goals. The core academic and Professional Military Studies courses at the Academy will provide a basis for this understanding. This segment of *Contrails* is designed to complement these courses and give you a general overview of the Soviet military.

For the average American perhaps the most threatening military capability of the USSR is that found in its strategic strike forces. As in the U.S. military, the Soviets rely on Intercontinental Ballistic Missiles (ICBM), Submarine Launched Ballistic Missiles (SLMB), and long ranged bombers to deliver nuclear warheads. The Soviets have been conducting an apparently continuous upgrading of these forces.

The key element in the Soviet version of the "Triad" is the ICBM arm which is referred to as the Strategic Rocket Forces (SRF). The SRF is equipped with approximately 1400 ICBMs, of which more than 550 are the newest types. These latest ICBMs are the SS-17, SS-18 and SS-19. They are generally categorized as fourth generation missiles. The Soviets are currently believed to be developing a new, fifth generation of strategic missiles.



ZIL-135 transporters with FROG Nuclear Missiles

The SRF is complemented by the Soviet SLBM fleet. This SLBM force is also undergoing an extensive modernization. The fleet includes approximately 30 older Yankee Class submarines with relatively short ranged (3,000 km) missiles. These submarines are now being replaced by a series of Delta Class SLBMs which are armed with longer ranged (approximately 8,000 km) missiles. This longer range allows the 32 Deltas to hit targets in the United States from waters close to the USSR. Reports have recently surfaced that the Delta Class will be superseded by an even larger submarine which will also be armed with long range missiles. This new craft has tentatively been named the Typhoon.

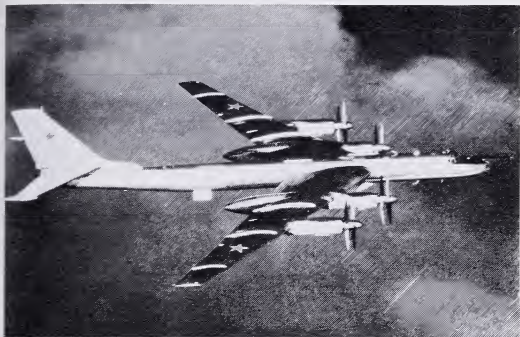


Delta III Class SSBN

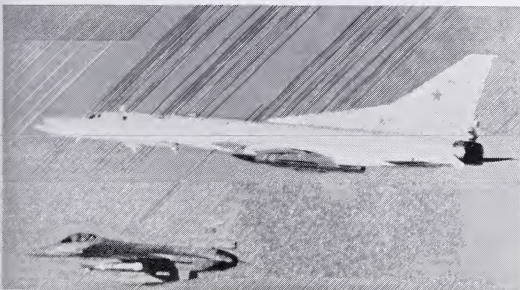


Yankee Class SSBN

The third and least important strategic arm in the USSR is the bomber force which is called Long Range Aviation (LRA). LRA only has approximately 150 long range heavy bombers. The bulk of these are the Tu-95 Bear, which is a pre-1960 design. A new bomber (or perhaps two) has been announced by the Soviets. LRA assets also include over 500 medium bombers which can be used in areas relatively close to the USSR. Most of these bombers are the older Badger, but the Soviets are slowly building up the number of Tu-26 (Tu-22M) Backfires, which some consider capable of intercontinental operations.

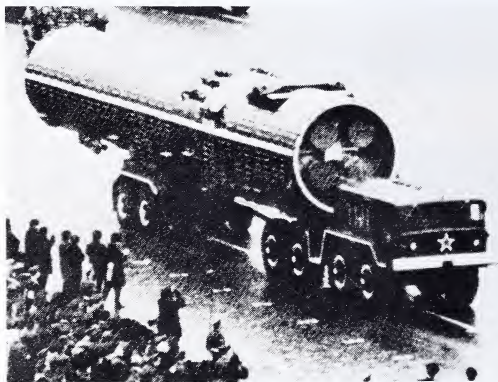


Tupolev Tu-95 Bear D



Tupolev Tu-26 (Tu-22M) Backfire with Norwegian F-16

These strategic offensive forces are backed by an extensive strategic defensive system. This system includes over 7,000 radars, 64 anti-ballistic missile (ABM) launchers with Galosh missiles, and over 10,000 surface-to-air missile (SAM) launchers at over 1,000 sites. These SAM systems include the SA-1 Guild, SA-2 Guideline, SA-3 Goa, and SA-5 Gammon. The Soviets are currently developing the SA-X-10 which is designed to shoot down low altitude targets such as the American cruise missiles.



GAZ 543 transporter with Galosh ABM

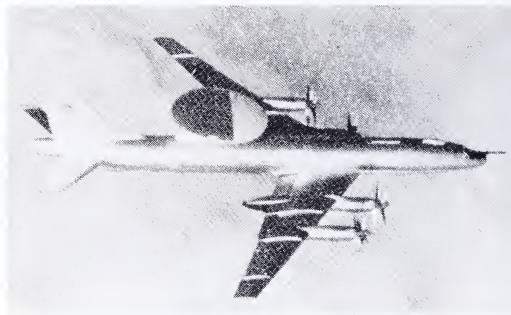


SA-2 Guideline SAM

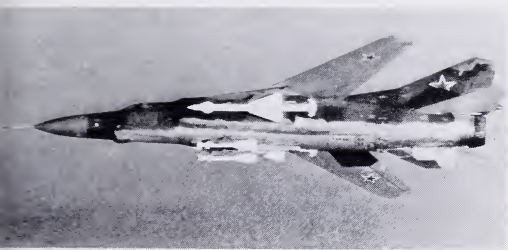


SA-3 Goa SAM

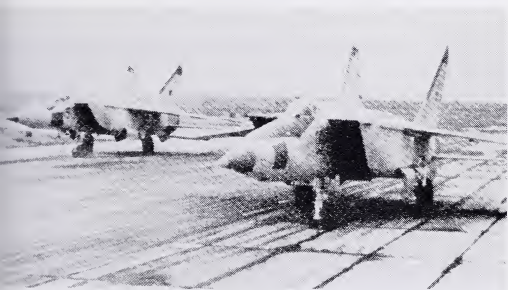
These ground based defensive systems are complemented by airborne systems. The Soviet radar network is being expanded by an Airborne Warning and Control System (AWACS). The current design is called the Moss, but an improved replacement is currently being developed. The Soviet interceptor force numbers approximately 2,500 aircraft. Although this force includes at least eight types of fighters, the bulk are Su-15 Flavons and MiG-23 Floggers. The Flogger is also the cornerstone of the tactical fighter force. Perhaps the most famous of the Soviet interceptors is the MiG-25 Foxbat (also used for tactical reconnaissance). The Foxbat was designed for high altitude, high speed intercepts. A newer variant, codenamed Foxhound, is being designed with a capability to attack low flying aircraft from a higher altitude; a look-down, shoot-down capability.



Tupolev Tu-126 Moss AWACS



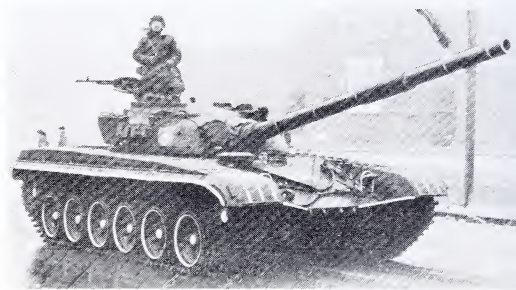
Mikoyan/Gurevich MiG-23S Flogger B with AA-2 Atoll and AA-7 Apex missiles



Mikoyan/Gurevich MiG-25 Foxbat

The strategic forces of the USSR are only part of an immense military machine. The Soviet Union maintains an extensive theater warfare capability in the form of a large army and a supporting air arm. The army has been roughly developed in the pattern of the mechanized ground forces which existed at the end of World War II.

These ground forces are built around armor, especially the tank. Although older T-54 and T-62 tanks are still found in Soviet and Warsaw Pact armies the current main battle tank is the T-72. The Soviets are rumored to be developing a new tank which has been labeled the T-80, but this has not yet been deployed. To keep pace with the tanks and to be protected themselves, Soviet infantry forces ride in armored personnel carriers (APCs). The most common and most modern of these is the BMP.



Soviet T-72 Main Battle Tank



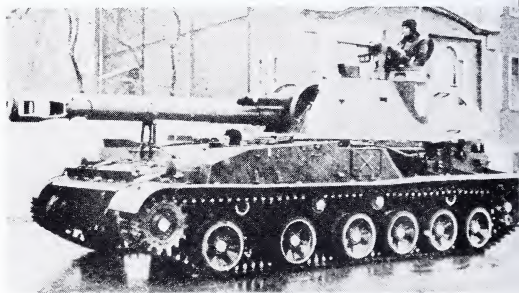
BMP-1 Mechanized Infantry Combat Vehicle



BTR-50 Armored Command Vehicle

Tank and infantry forces must have fire support to be effective on the modern battlefield; also, Soviet doctrine emphasizes heavy firepower. Artillery fire is provided by a variety of systems. These include large numbers of traditional towed artillery pieces; however, self-propelled weapons, especially in the 122mm and 152mm sizes are entering service. These provide mobile and responsive support. The Soviets also use large numbers of multiple rocket launchers and guided missiles for firepower.

The firepower of ground forces must also include air defense systems. The air defense network which protects the Soviet Army is the most extensive and intense to be found anywhere in the world. This network includes highly mobile guns and surface-to-air missiles (SAMs). Although a variety of guns are available, the most effective weapon is the ZSU-23-4 Shilka. This system combines four 23mm guns



152mm M-1973 Self-Propelled Howitzer

with radar and optical sighting systems. At present, an upgraded AAA system is being developed.

A variety of SAM systems are assigned to the Soviet ground forces. The short ranged, infra-red guided SA-7 Grail and SA-9 Gaskin are normally found forward with the ZSU-23-4 protecting the attacking forces. These forward assets are provided with additional support by the radar guided SA-4 Ganef, SA-6 Gainful, and SA-8 Gecko. The Soviets are also reported to be developing a new radar guided system which has been identified as the SA-11 and an infrared system labeled the SA-13. The variety of air defense systems available to the Soviet ground forces allows dense, complementary and overlapping protection.



ZSU-23-4 Shilka Quad Self Propelled AA System



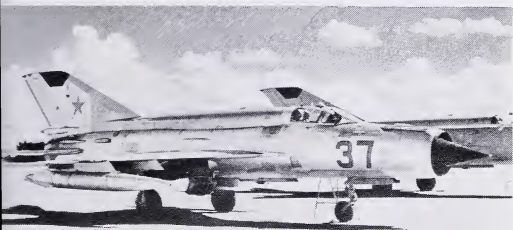
SA-7 Grail SAM



SA-6 Gainful SAM

The Soviet ground forces are also supported by a dedicated arm of the Soviet Air Force which is called Frontal Aviation (FA). FA aircraft provide reconnaissance, air defense and ground attack support. The reconnaissance mission is carried out by modified versions of tactical aircraft or MiG-25 Foxbats. The air defense role is carried out by fighters such as the older MiG-21 Fishbed. Although an old design, many modified, late model Fishbeds are still in service. The current main line fighter for FA is the MiG-23 Flogger B/G. This variable geometry wing (VGW) aircraft can perform ground attack as well as air-to-air missions. The Soviet Air Force is reported to be developing two new fighters in the F-16/17 and F-15 classes; however, neither of these aircraft have entered production.

The ground attack arm of FA has a variety of aircraft available to conduct operations against enemy ground targets. The MiG-27 Flogger D is a variant of the MiG-23.



Mikoyan/Gurevich MiG-21 Fishbed



Mikoyan/Gurevich MiG-23 Flogger G



Mikoyan/Gurevich MiG-27 Flogger D

The Su-17 Fitter C/D is a VGV improved model of the Su-7 Fitter. Both of these systems are single seat fighter-bombers which can provide close air support or go against deeper targets. These two aircraft also are supported by a longer ranged, two seat fighter-bomber, the Su-24 Fencer. The Fencer is similar to the American F-111, but is slightly smaller. The Soviets also have developed a new ground attack/close air support aircraft, The Sukhoi Su-25 Frogfoot, which is similar to the Air Force A-10.



Sukhoi Su-17 Fitter C

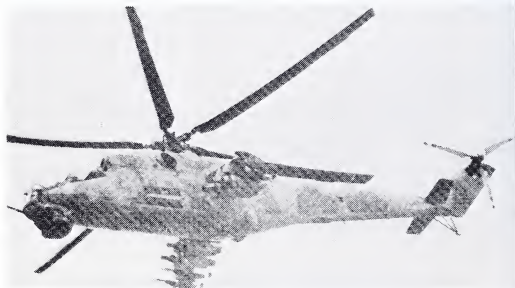


Sukhoi Su-24 Fencer

The Soviet Air Force also has responsibility for attack helicopter systems. Large numbers of these rotary wing aircraft are entering the Soviet inventory. The most impressive attack helicopter in FA is the Hind D which is one of the most heavily armed helicopters in the world. The Hind D carries anti-tank guided missiles, machine guns, rockets and/or bombs. It also can carry troops on an assault mission.



Mil Mi-24 Hind D helicopters in formation



Mil Mi-24 Hind D with turreted gatling gun

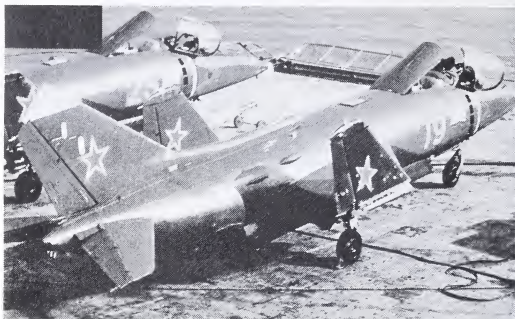


Mil Mi-24 Hind E with tube-launched ATGMs

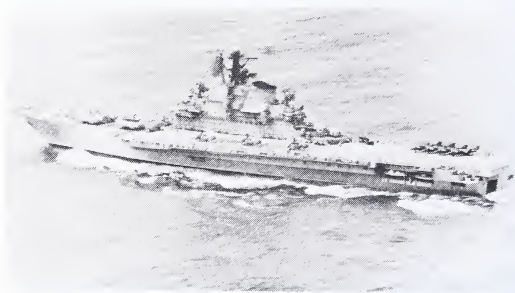
This summary has only briefly described the various military forces and systems available to the Soviet Union. In the interest of space, such important elements as the Naval Fleets, Naval Infantry, and Airborne forces have not been described. This coverage should, however, serve as a starting point for the professional study of the armed forces of the USSR.



Nuclear-powered Guided Missile Cruiser *Kirov*

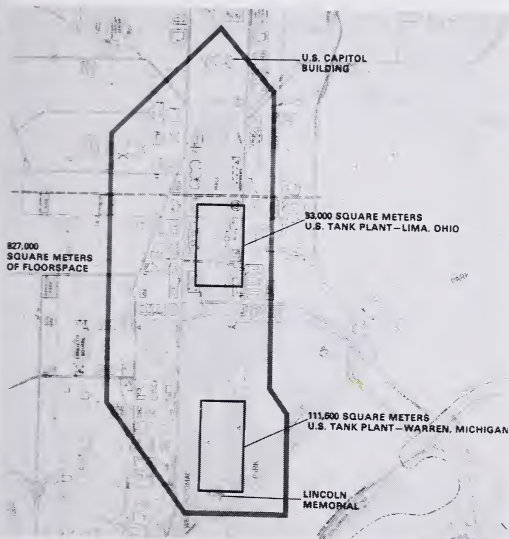


Yakovlev Yak-36 Forger A VTOL



Kiev Class V/STOL Aircraft Carrier *Minsk*

AREA OF NIZHNIY TAGIL TANK PLANT
(Superimposed on Washington, D.C.)



“See out your enemy. Do not ask now many, but only where he can be found.” (Soviet motto.)

THE AIR FORCE SONG

I

Off we go into the wild blue yonder,
Climbing high into the sun;
Here they come zooming to meet our thunder,
At'em boys, giv'er the gun!
Down we dive spouting our flame from under,
Off with one hell-uv-a-roar!
We live in fame or go down in flame,
Nothing'll stop the US Air Force!

II

Minds of men fashioned a crate of thunder,
Sent it high into the blue;
Hands of men blasted the world asunder,
How they lived God only knew!
Souls of men dreaming of skies to conquer
Gave us wing, ever to soar.
With Scouts before and bombers galore,
Nothing can stop the US Air Force!

III

Here is a toast to the host of those who love the vastness
of the sky,
To a friend we send the message of his brother men
who fly.
We drink to those who gave their all of old,
Then down we roar to score the rainbow's pot of gold.
A toast to the host of men we boast,
The US Air Force.

IV

Off we go into the wild sky yonder,
Keep the wings level and true!

If you'd live to be a gray-haired wonder,
Keep the nose out of the blue!
Flying men guarding our nation's borders,
We'll be there followed by more.
In echelon we carry on!
Nothing'll stop the US Air Force.



THE STAR SPANGLED BANNER

by Francis Scott Key, 1814

I

O say can you see, by the dawn's early light
What so proudly we hail'd at the twilight's last
gleaming?
Whose broad stripes and bright stars, thro' the
perilous fight,
O'er the ramparts we watched, were so gallantly
streaming?
And the rockets' red glare, the bombs bursting in
air,
Gave proof thro' the night that our flag was still
there.
O say, does that star spangled banner yet wave
O'er the land of the free and the home of the
brave?

II

On the shore, dimly seen thro' the mists of the
deep,
Where the foe's haughty host in dread silence
resposes,
What is that which the breeze, o'er the towering
steep,
As it fitfully blows, half conceals, half discloses?
Now it catches the gleam of the morning's first
beam,
In full glory reflected, now shines on the steam:
'Tis the star spangled banner: O long may it wave
O'er the land of the free and the home of brave?

III

And where is that band who so vauntingly swore
That the havoc of war and the battle's confusion,
A home and a country should leave us no more?
Their blood has wash'd out their foul footsteps'
pollution.

No refuge could save the hireling and slave
From the terror of flight or the gloom of the grave:
And the star spangled banner in triumph doth wave
O'er the land of the free and the home of the
brave!

IV

O thus be it ever when free men shall stand
Between their lov'd homes and the war's
desolation;

Blest with vict'ry and peace, may the heav'n-
rescued land

Praise the pow'r that hath made and preserv'd us a
nation!

Then conquer we must when our cause it is just,
And this be our motto: "In God is our trust!"
And the star spangled banner in triumph shall wave
O'er the land of the free and the home of the
brave!



“Visual Contact” by William Phillips

THE CADET HYMN

I

Lord, guard and guide the men who fly
Through the great spaces of the sky;
Be with them traversing the air
In darkening storms or sunshine fair.

II

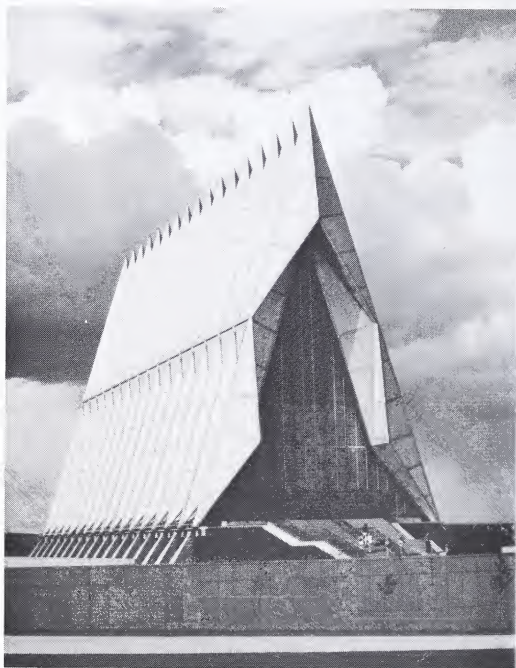
You who support with tender might
The balanced birds in all their flight,
Lord of the tempered winds, be near,
That, having you, they know no fear.

III

Control their minds with instinct fit
Whene'er, adventuring, they quit
The firm security of land;
Grant steadfast eye and skillful hand.

IV

Aloft in solitudes of space,
Uphold them with your saving grace.
O God, protect the men who fly
Through lonely ways beneath the sky.



USAF Academy Cadet Chapel

THE CADET PRAYER

**Lord, God of hosts, my life is a
stewardship in Your sight.
Grant the light of Your wisdom to the path
of my cadet days.
Instill within me an abiding awareness of
my responsibility toward You, my country
and my fellowman.**

**I ask true humility that, knowing self,
I may rise above human frailty.
I ask courage that I may prove faithful
to duty beyond self.
I ask unfailing devotion to personal
integrity that I may
ever remain honorable without
compromise.**

**Make me an effective instrument of Your
peace in the defense of the skies that
canopy free nations.
So guide me daily in each thought, word
and deed, that I may fulfill Your will.
May these graces abide with me, my
loved ones, and all who share my
country's trust. Amen**



“ ‘Bring Me Men . . .’ And Women” by Nathalee Mode

BRING ME MEN . . .

by Samual Walter Foss

Bring me men to match my mountains,
Bring me men to match my plains;
Men to chart a starry empire,
Men to make celestial claims.
Bring me men to match my prairies,
Men to match my inland seas;
Men to sail beyond my oceans,
Reaching for the galaxies.
These are men to build a nation,
Join the mountains to the sky;
Men of faith and inspiration,
Bring me men, bring me men, bring me men!
Bring me men to match my forests,
Bring me men to match my shore;
Men to guard the mighty ramparts,
Men to stand at freedom's door.
Bring me men to match my mountains,
Men to match their majesty;
Men to climb beyond their summits,
Searching for their destiny.
These are men to build a nation,
Joint the mountains to the sky,
Men of faith and inspiration,
Bring me men, bring me men, bring me men!



"Cheetah's Talons" by Attila Hejja

HIGH FLIGHT

by John Gillespie Magee, Jr.

Oh, I have slipped the surly bonds of earth
And danced the skies on laughter-silvered wings;
Sunward I've climbed and joined the tumbling
 mirth
Of sun-split clouds—and done a hundred things
You have not dreamed of—wheeled and soared and
 swung
High in the sunlit silence. Hovering there
I've chased the shouting wind along and flung
My eager craft through footless halls of air.
Up, up the long delirious, burning blue
I've topped the wind-swept heights with easy grace,
Where never lark, or even eagle flew;
and, while with silent, lifting mind I've trod
The high untrespassed sanctity of space,
Put out my hand, and touched the face of God.

USAF ACADEMY CHEERS

USAFA PRE-GAME

**U-S-A-F-A
Air ----- Force
Fight! Fight! Fight!**

USAFA POST-GAME

Sing the third verse of the Air Force Song.

FALCON FIGHT SONG

**Fly you Falcons down the field; tear the
enemy asunder!
Bare your talons, make them yield; give them
all your thunder!**

**Spread your strong wings wide and high; fight
for victory!
Never say die, keep flying high, for the Air
Force Academy!**

BRIEFING

by Gill Robb Wilson

Ahoy there, you who write the books and
ponder on the definitions of airpower!

I'll brief you on airpower
straight from the horse's mouth.
Still squinting
from the sun on top, still stiff from
the dog fighting, still grimed from the
cockpit,
still marked with the headings—
I'll tell you about airpower.

Airpower is the models you built as a
kid,
and the dreams you nurtured as a boy,
the freedom you craved to go out and
beyond.

Airpower is the chatter in the ready
room
before the horn blares, "Pilots! Man
your planes!"

Airpower is a faith
that your flight leader won't pile you
in on target.

Airpower is the split-second pressing
of a button to get home a deflection
shot.

Airpower is the comfort of your ear
phones,
the fit of your chute,
the dependability of your wrist watch,
the steady fluctuation of your oxygen
dial.

Airpower is confidence in the plane
you fly,
confidence in the "old man" who sent
you on the mission,
confidence in yourself.

Airpower is the skill and devotion
of a crew chief, the respect of your
squadron mates,
the lift of love in the letters from home.

Air power is a million little things
which merge like molecules of molten
metal to form a spar
for the wings of your spirit.

But there is something more to add,
the final thing that tempers all the rest.
You must believe that, bigger than
yourself,



enduring when you're gone, surviving
though you perish,
your cause is right and just.

There is no power on earth or sea or
sky
that can be power such as the airman
needs
without convictions. The integration of
his faith
with all his skill of trade—
well, such is power aloft.

God is your guts, good men at your
back,
wings that stay on—and Tally Ho.



“Autumn Chapel”

AIR FORCE AND AIR FORCE ACADEMY TERMS

- ABORT** (v) to discontinue or abandon: (n.) an abandoned take-off.
- BANDIT** (n.) an unfriendly aircraft.
- BASE** (n.) installation owned and/or operated by the Air Force.
- BASE LEG** (n.) the next to the last leg of traffic pattern flown perpendicularly to the runway.
- BEDCHECK CHARLIE** (n.) World War I ace who appears at USAFA football games and other Wing functions to lend supernatural support.
- BIRD** (n.) a flying machine, usually an aircraft, but sometimes a missile.
- BOGEY** (n.) an unidentified flying object or radar blip. A member of Wing or Group Staff.
- BOMB** (n.) to do extremely poorly, i.e., to bomb a graded review (GR).
- BUFF** (n.) big, ugly, fat fellow.
- BUY THE FARM** (v.) to crash.
- CANOE U.** (n.) a small school which forms a suburb of the capital of Maryland with a campus partly on land and partly in Severn River.
- CEILING** (n.) that level of altitude where the sky becomes more than one half obscured by clouds as seen by an observer on the ground.
- COMM SHOP** (n.) that organization coming under the control of the Commandant and consisting of those departments directly affecting the Cadet Wing.

- CONTRAILS** (n.) Condensation trails, a visible trail of water droplets or ice crystals formed in the wake of an aircraft flying at high altitude. Also the name of the Air Force Cadet Wing handbook.
- CONVERTER** (n.) the T-37, since it converts JP-4 fuel directly to noise.
- CRASH** (n.) a landing in which the vertical velocity is so great and the time spent in reducing it to zero is so brief that the deceleration and hence the forces acting are so large as to cause structural failure.
- CREW CHIEF** (n.) enlisted man or NCO in charge of maintenance of a certain aircraft.
- DOOLIE** (n.) that insignificant whose rank is measured in negative units; one whose potential for learning is unlimited; one who will graduate at some time approaching infinity.
- DOWNWIND** (n.) the leg in a traffic pattern which is parallel to the runway and with the wind.
- DRAG** (n.) a resistant force exerted in a direction opposite to the direction of motion.
- FIGMO** (adj.) that state of being which causes one to place a de-emphasis on matters of military or other importance and proceed to kiss it off.
- FINAL** (n.) the last leg of traffic pattern, the aircraft approaching the runway in the direction of landing.
- FIRSTIE** (n.) that immortal having superhuman powers and disposed to acts of great wonder and cunning; a first class cadet.
- FORWARD AIR CONTROLLER** (n.) an officer with a pilot rating and usually airborne qualified in charge of a combat control team responsible for directing aircraft to targets by radio in close air support operations.

FREE FALL (n.) condition of weightlessness.
GIB (n.) guy in the back.
GOONEY BIRD (n.) the C-47.
GROUND POUNDER (n.) non-flying officer.
GUIDED MISSILE (n.) unmanned bird with self contained propulsion system.
HACK (n.) a time synchronization; (v.) to be able to cope with; "he can hack it."
HOT (adj.) fast or good.
HUDSON HIGH (n.) a little school on the Hudson River having 178 years of tradition unhampered by progress (West Point).
HYPERSONIC (adj.) speeds in excess of Mach 5.
HYPOXIA (n.) oxygen lack.
INITIAL (n.) entry leg into a traffic pattern.
INTERDICTION (n.) bombing of points on the enemy's supply route in an attempt to cut off his supply line.
INTRAMURDER (n.) athletic competition between squadrons.
JET STREAM (n.) a high velocity wind usually occurring just below the tropopause in temperate zones.
JOCK (n.) that individual performing superhuman feats of physical dexterity; an athletic.
LEG (n.) non-airborne qualified personnel.
LIFT (n.) the force upon an aircraft that acts in an upward direction opposing the pull of gravity.
MACH (n.) the speed of sound; unit of measurement of speed in relation to the local speed of sound, such as ".9 MACH."
MAGIC (n.) that name applied to the department of Electrical Engineering and all related hand waving activities.

- MAX** (n.) the maximum 100%; (v.) to achieve the maximum.
- NINO BALDACCI** (n.) that individual having entered with the class of '59 and remaining until the present time never having been off academic probation and never having taken a privilege. He is a perpetual turnback near and dear to all cadets.
- PITCH** (n.) rotation about the lateral axis of the aircraft.
- POLARIS** (n.) the north star; name of the Air Force Cadet yearbook.
- PORT** (adj.) left (as opposed to right).
- POST** (n.) an order signifying to a subordinate that his/her presence is no longer necessary.
- PRO** (adj.) short for probation, i.e., Ac Pro (academic probation).
- ROCK** (n.) that superhuman free from entanglements with the opposite sex.
- ROLL** (n.) movement about the longitudinal axis of an aircraft.
- SCRAMBLE** (v.) to get an aircraft ready for combat in the shortest time possible.
- SIERRA HOTEL** (adj.) phonetic abbreviation denoting a job well done.
- SMACK** (n.) soldier minus ability, coordination, and knowledge.
- SOUP** (n.) thick clouds.
- STAFF TOWER** (n.) the level in the dining hall where Wing Staff eats.
- STARBOARD** (adj.) right (as opposed to left).
- STRACT** (adj.) extreme and excessive military motivation.
- T-BIRD** (n.) the T-33.
- THRUST** (n.) a propelling force exerted on an aircraft or missile.

- THUD (n.) the F-105.
- TOWER (n.) control tower; the level in the dining hall where Wing Staff eats.
- TRUCK DRIVER (n.) the pilot of a non-fighter aircraft with more than one engine, i.e., a bomber or transport pilot.
- TURN AROUND (n.) that time between when an aircraft is sent for necessary maintenance or fueling and when it is combat ready; that time when beverages have been sent out in the dining hall.
- TWEET (n.) the T-37 (see converter).
- TWO (n.) a command ordering the subordinate to return to whatever he/she was occupied with before being interrupted.
- VATOR (n.) an ingenious device designed to fail when the wing returns from holidays or TDY programs; as in "hold the . . ."
- YAW (n.) rotation about the vertical axis of an aircraft.
- WALDO (n.) a puny pink animal found wandering aimlessly about Jacks Valley during the summer months.
- WARTHOG (n.) the A-10.
- ZILCH (n.) the opposite of max; nothing.
- ZOOMIE (n.) that term by which a cadet is commonly known among civilians.

ABBREVIATIONS (USAF)

AAC	Alaskan Air Command
ABN	Airborne
ADIZ	Air Defense Identification Zone
AFB	Air Force Base
AFCC	Air Force Communications Command
AFIT	Air Force Institute of Technology
AFLC	Air Force Logistics Command
AFRES	Air Force Reserve
AFSC	Air Force Speciality Code; Air Force Systems Command
AIM	Air Intercept Missile
ALC	Air Logistics Center
ALCM	Air Launched Cruise Missile
AMRAAM	Advanced Medium-Range Air-to-Air Missile
AO	Airdrome Officer
APU	Auxiliary Power Unit
ARM	Anti-Radiation Missile
ASAP	As Soon As Possible
ATA	Actual Time of Arrival
ATC	Air Traffic Control; Air Training Command
ATD	Actual Time of Departure
AU	Air University
AWACS	Airborne Warning and Control System
AWOL	Absent Without Leave
BLC	Boundary Layer Control
BMEWS	Ballistic Missile Early Warning System
BVR	Beyond Visual Range
CAS	Close Air Support

CAVU	Ceiling and Visability Unlimited
CBR	Chemical, Bilogical, and Radiological (Warfare)
CBU	Cluster Bomb Unit
CEA	Circular Error Average
CEP	Circular Error Probable
CINC	Commander in Chief
COIN	Counter Insurgency
CONUS	Continental United States
CP	Command Post
CQ	Charge of Quarters
DACT	Dissimilar Air Combat Tactics
DAF	Department of the Air Force
DARPA	Defense Advanced Research Projects Agency
DCS	Deputy Chief of Staff
DEW	Distant Early Warning Line
DFC	Distinguished Flying Cross
DOD	Department Of Defense
DR	Dead Reckoning
DSC	Distinguished Service Cross
ECM	Electronic Countermeasures
E&E	Escape and Evasion
ELINT	Electronic Intelligence
ETA	Estimated Time of Arrival
ETD	Estimated Time of Departure
EWO	Emergency War Order; Electronic Warfare Officer
FAA	Federal Aviation Administration
FAC	Forward Air Controller
FEBA	Forward Edge of the Battle Area
FLIR	Forward Looking Infra-Red
FSD	Full Scale Development

FSW	Forward Sweep Wings
FWC	Fighter Weapons Center
GAR	Guided Air Rocket
GCA	Ground Controlled Approach
GCI	Ground Controlled Intercept
GLCM	Ground Launched Cruise Missile
HiMAT	Highly Manueverable Aircraft Technology
HQ	Headquarters
ICBM	Intercontinental Ballistic Missile
IFF/SIF	Identification-Friend or Foe/Selective Identification Feature
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IP	Initial Point; Instructor Pilot
JAAT	Joint Air Attack Team
JATO	Jet Assisted Takeoff
JCS	Joint Chiefs of Staff
LABS	Low Altitude Bombing System
LANTIRN	Low-Altitude Navigation Targeting Infra-Red for Night
LOP	Line Of Position
LORAN	Long Range Navigation
LOX	Liquid Oxygen
MAC	Military Airlift Command
MIRV	Multiple Independently-targetable Reentry Vehicle
NASA	National Aeronautics and Space Administration
NATO	North American Treaty Organization
NLT	Not Later Than
NORAD	North American Aerospace Defense Command

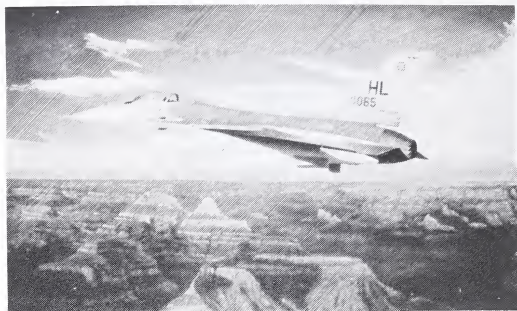
OER	Officer Effectiveness Report
OIC	Officer in Charge
PACAF	Pacific Air Forces
PCS	Permanent Change of Station
PJ	USAF Combat Pararescue Man
PLSS	Precision Location Strike System
POL	Petroleum, Oil, Lubricants
RADAR	Radio Detection and Ranging (Obsolete)
RDJTF	Rapid Deployment Joint Task Force
RECCE	Reconnaissance
RHIP	Rank Has Its Privileges
RON	Remain Overnight
RSVP	Respondes s'il vous plait (Answer if you please)
SAC	Strategic Air Command
SAGE	Semi-Automatic Ground Environment
SALT	Strategic Arms Limitations Treaty
STAM	Surface-to-Air Missile
SAR	Search and Rescue
SHAPE	Supreme Headquarters — Allied Powers Europe
SHORAN	Short Range Navigation
SLBM	Sea Launched Ballistic Missile
SOF	Supervisor of Flying
SOP	Standard Operating Procedure
SP	Security Police
SPACECOM	Space Command
SPADATS	Space Detection And Tracking System
SRAM	Short Range Attack Missile
STOL	Short Takeoff and Landing
TAC	Tactical Air Command
TACAN	Tactical Air Navigation

TAR	Terrain Avoidance Radar
TDY	Temporary Duty
TFS	Tactical Fighter Squadron
TFW	Tactical Fighter Wing
TWX	Teletype Message
UCMJ	Uniform Code of Military Justice
UHF	Ultra High Frequency
UHT	Undergraduate Helicopter Training
UNT	Undergraduate Navigator Training
UPT	Undergraduate Pilot Training
USAFE	United States Air Forces in Europe
VFR	Visual Flight Rules
VHF	Very High Frequency
VOR	VHF Omnidirectional Range
VTOL	Vertical Takeoff and Landing
WSO	Weapon-System Operator
WX	Weather
X	Experimental (as in designation of aircraft)
Y	Prototype
ZI	Zone of the Interior

ABBREVIATIONS (AFA)

ACQ	Academic Call to Quarters
AFCW	Air Force Cadet Wing
AH	Director of Athletics
AMI	A.M. Inspection
ASAP	As Soon As Possible
BOR	Base of Ramp
CCQ	Cadet in Charge of Quarters
CDB	Cadet Disciplinary Board

CFD	Correct For Data
CIC	Cadet In Charge
CW	Commandant of Cadets
CSQ	Cadet Squadron
DF	Dean of the Faculty
DI	Dormitory Inspector
EI	Extra Instruction
GPA	Grade Point Average
GDO	Group Duty Officer
GR	Graded Review
IP	Instructor Pilot
IRI	In Ranks Inspection
MPA	Military Performance Average
NCOD	Noncommissioned Officer of the Day
NE	Notation Error
OTF	Over The Fence
PDA	Public Display of Affection
PE	Physical Education
PFT	Physical Fitness Test
RTFQ	Read The Full Question
RTP	Read The Problem
SAMI	Saturday A.M. Inspection
SERE	Survival, Evasion, Resistance, Escape
SDO	Squadron Duty Officer
SOD	Senior Officer of the Day
UOD	Uniform Of the Day
WACQ	Weekend Academic Call to Quarters



“Canyon Falcon” by William Phillips



United States Air Force Thunderbirds

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